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# THE AMERICAN JOURNAL OF PSYCHIATRY

## THE ROLE OF MOTIVATION IN RECOVERY FROM ILLNESS<sup>1</sup>

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It is with the greatest trepidation that I offer this audience any opinion upon the scope or the practice of psychiatry. In fact, I would not presume to do this were it not for the fact that, as most of you know, I have the greatest admiration for, and interest in, psychiatry.

The gap between psychiatry and other branches of medicine is nowhere so apparent as in the lack of psychological studies on the motivation to get well in somatic illness. Much has been written by psychiatrists for the emotionally ill person, but they have been remiss in turning their attention to those with somatic illness. It is true that the psychological factors involved in the so-called psychosomatic cases have been and are being studied in great detail, but I would like to limit this paper to the problem of motivation only.

Of course, in most cases, illness is accompanied by so much pain or discomfort, both mental and physical, that the desire to get well is naturally very strong, plus the normal compulsion on the part of the body itself to regain its physiological equilibrium. Sometimes, however, the reverse of this is seen. A case which illustrates this situation with startling clarity is that of a former medical officer at Walter Reed Hospital. He had been in normally good health; but, on his annual physical examination, he was found to have a small hernia. No particular emotional disturbances had ever been noticed. The operation was quite uneventful but, from the time he came out of the anesthetic, he did not react well. He died of a paralytic ileus. There had been no traction on the gut or any other known reason for this complication. After he died, it was found that, before he entered the hospital, he had carefully laid out his full dress uniform in which to be buried, and had left instructions for his funeral.

Cases of illness or other disability in which the patient does not want to get well, or is ambivalent, may, I think, be divided into 3 categories: (1) persons disabled with a purely somatic illness or other disability for which there is every hope for recovery, for example, a patient with a broken leg; (2) patients ill with psychosomatic diseases; and (3) persons disabled by a devastating, incurable physical disability, such as blindness or paraplegia.

Then there are also the border-line cases which may be said to fall midway between somatic and psychosomatic illnesses. In these cases the physical effects of the disease produce a profound effect upon the psychology of the patient. One notable example is the severe depression which sometimes follows the acute stage of influenza. Initially, in this period, there are real somatic symptoms, most of which arise out of a circulatory instability; but in many cases because of the depression these symptoms tend to become fixed and may engender a true anxiety state, so that the character of the illness undergoes a transition from somatic to psychosomatic.

### SOMATIC CASES

There may seem to be very little difference between persons in the first and second categories; however, there is a deep and important difference. The person with a broken leg may find in his illness a retreat from responsibilities and independence which he had formerly accepted or even overreacted to. Suddenly he finds that it is possible for him to be relieved of this situation and he does not look forward with pleasure to returning to it. Since he had never taken refuge in psychosomatic illness previously, and had before been able to assume responsibility, it is relatively simple to give such a person an understanding of his reaction. The same is true in cases of convalescence which the patient unduly prolongs.

The need for the internist's and surgeon's understanding of this problem was markedly

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.

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increased during the war. Admission to hospital furnished a welcome relief from the constant danger in combat and the physical discomfort of living under combat conditions. Disregarding the cases of cowards who tried to malingering their way into hospital, first-class soldiers frequently showed a reluctance to recover to the point of returning to more duty of the same unpleasant nature. It would be most unfair to think that a large proportion of these consciously or wilfully created symptoms or magnified small residuals in order to shirk further combat duty. It is unquestionably true that to most of these soldiers these imaginary or exaggerated symptoms became quite real, and tended to gain in reality with length of stay in hospital.

This was amply demonstrated to be merely a question of motivation. So long as the soldier remained in an active hospital ward, where his whole environment was one of protection, he developed no urge to overcome his disability when such recovery meant his return to an unpleasant and unhealthy environment. However, when this soldier was transferred from an active treatment ward to a rehabilitation section or to a rehabilitation hospital, in 9 cases out of 10 he was shortly bending every energy to reconditioning himself for further combat. This was entirely a matter of motivation. In our rehabilitation hospitals, under the able direction of Colonel Rex Dively and as operated by Colonel Frank Stinchfield, the major emphasis was placed upon psychological rehabilitation, because it was found that physical rehabilitation largely took care of itself once the soldier was properly motivated.

One of the impressive experiences of this war was to follow the progress of the convalescent battle casualty through a rehabilitation center. The average case was obviously resistant upon admission. He exhibited little interest in overcoming his disability promptly. But the very spirit of the place, as exuded by the permanent staff and by the older patients, was too much for the newcomer to resist; and he soon forgot that there were advantages to being disabled and fixed his eye upon the goal of the true soldier—that of returning to his old outfit ready for more combat with them.

The value from the physical standpoint of brief convalescence helps with the psychological problem also. In wartime, this was shown by the experience with herniated discs. The following is quoted from a letter from Dr. Winchell Craig(1) which describes his experiences during the war:

There was no question in our mind that the individual who had a definite objective in recovering from his injuries had better results than the one who didn't. With regard to intervertebral discs we found that every Marine officer who came in disabled and was operated on returned to duty with enthusiasm. Every Naval officer whose disc disability prevented him from taking over a new command, or advancement, returned to duty in record time. On the other hand, disgruntled officers who were seeking disability retirement did not do so well. The men who returned to duty admitted that they had some residual pain and discomfort, but that it in no way prevented them from returning to full duty.

The enlisted personnel were a different story because of motivation. I remember one lad of about nineteen years of age who very definitely had low back and sciatic pain, but he also had pains elsewhere and when I discussed his problem very frankly with him he stated that he knew an operation would be of no value as he wanted to get out of the Navy. Going a little further into his history I found that he had served for over two years, had twice been blown off a destroyer, had done a fairly good job, but now was fed up and tired. We discharged him and after three months' vacation he re-enlisted in the Navy as he had promised me he would do. I think it would have been a mistake to have kept him in the service or to have attempted any surgery.

I think I have summed up the war experiences which I have gathered from Dr. Spurling and my other colleagues and I am quoting from my paper: "In summary, war experiences with herniated nucleus pulposus further emphasized the necessity of closer cooperation between neurologists, orthopedists and neurosurgeons in making a diagnosis and in treating patients who had low back and sciatic pain due to herniated nucleus pulposus."

I hesitate very much to criticize or amend the conclusions of Dr. Craig, Dr. Spurling, and the other distinguished neurosurgeons whose opinions I have just read, but I feel very strongly that they made a very serious omission when they did not include psychiatrists as essential consultants in these cases of low back pain. As they state so emphatically, motivation is a most important element in the recovery of these patients; and who, more than the psychiatrist, is competent to discover motivation and to direct it toward proper objectives?



## PSYCHOSOMATIC CASES

With the psychosomatic cases the internist must learn that it is not a question of the patient's "not wanting to get well." He needs to understand that the physical illness is due to tensions arising from conflicts of which the patient is not aware. The patient can endure neither the conflict nor the anxiety, and he obtains psychological relief at the expense of physical discomfort. Once the internist recognizes this, he will call in a psychiatrist or, if he has the proper training, he can search for the cause of the anxiety which is the basis of the physical symptoms. He will then be able to motivate the patient to get well on a rational basis. He can make him want to get well because he no longer needs the illness as an outlet for anxiety over a repressed conflict or wish. Motivation to get well in these cases depends both on the resolution of the neurotic conflict and on a study of the patient's resources which have not been adequately utilized and a channeling of them into constructive and satisfying ways. In many of these cases, initiative has been so blocked that, even though the emotional problem is being worked out, recovery is speeded if the patient is given help to find adequate outlets for whatever unused potentialities he has. These are often found in both emotional and intellectual creative spheres. He may have unrealized potentialities for relationships with people, as well as ability to do things which has not been used.

Another very important factor that enters into these psychosomatic cases, no less than in purely physical disabilities, is the gain to be had from being sick. The patient can be dependent without fear of criticism from himself or others. He can be the center of attention. He may receive a pension. In these cases it is especially important to make a careful study of the patient's potentialities and give him all the help and support he needs to start him off toward realizing them, so that he will find greater satisfaction in doing than in just being. The former will give him true satisfaction, free from the neurotic guilt which may accompany dependency and the satisfaction, once experienced, will be an impetus for its continuation. It was this element of therapy that was the most ef-

fective in our rehabilitation centers in the European Theater of Operations. The disabled soldier was returned as soon as possible to the tools of his temporary trade—the rifle, the bayonet, the airplane machine gun, the radio set. He was quietly coerced into *doing*—so quietly that he did not recognize the coercion—and he automatically ceased merely to *be*. His attention was attracted by his daily improvement rather than by his aches and pains and stiffened joints and, encouraged by the better showing he could make in competition with his fellows, top physical condition became his goal.

However, it is very important in civilian life that whatever suggestions are made to motivate the patient to get well should be in line with the patient's true interests and abilities and not haphazard guesses. Under the stimulus of the excitement of war, temporary motivation may be created in channels of little permanent interest—even of pronounced aversion—to the patient; but such a stimulus is rarely present in ordinary life. So many doctors are inclined to say, "Oh, why don't you paint or take a course in automobile mechanics?" which may be the doctor's interests but have no relation to the patient. Time must be taken for a careful history and study of the patient to make a proper diagnosis of his capabilities and interests just as in a differential physical diagnosis. The psychiatrist called in on consultation and for brief therapy is just as apt to err in this respect as the internist.

Continued support must be given the patient to help him over the disappointments and discouragements of the preliminary period.

I think we should not close this brief discussion of psychosomatic illness without mentioning those cases for which the physician himself is largely, if not wholly, responsible. These are cases in which the attention of the patient is focussed upon some possible sequel by advising him how to avoid it. A good example is stressing the danger of cardiac involvement in cases of rheumatic fever. A surprisingly high proportion of adults recover from rheumatic fever with no organic cardiac sequel, but with a pronounced cardiac neurosis. It should be, it *is*, possible for the physician to guard against cardiac complica-

tions without the patients being made unduly aware of the danger.

Even if the heart is permanently damaged by this or some other disease, it is not necessary to increase the patient's invalidism by adding a neurosis to his physical disability; and there are today entirely too many people who are conscious of their hearts or their stomachs or their kidneys. Familiarity with disease gives the physician some contempt for it. In any event, he views it objectively and too frequently is inclined to discuss it too frankly with the patient, or with another medical man in the presence of the patient. The patient, to whom medical terms are frightening because they are mysterious, may build for himself an exaggerated and distorted bogey out of a few innocuous comments. No patient takes an objective view of his own illness; to him, it is intensively subjective.

#### PERMANENTLY DISABLED

The paraplegic is the outstanding example of one of the most difficult situations in terms of motivation with which we have to deal. The patients know that they can never get over their infirmity. They have enough money to live on comfortably; they have an automobile; they have received a great deal of attention in terms of training and medical and surgical care. One of the strongest incentives—that of raising a family—is denied to most of them. The only motivation left is that which comes from the inner satisfaction of work well done, and pride in accomplishment; and, perhaps, in the feeling of some degree of independence achieved through victory against heavy odds. The great physical dependence of the paraplegic makes it even more important for his mental health that he be independent in other ways. It is therefore particularly important that the study of each patient include his interests and capabilities. Where we have been successful in doing this the picture is changed from a depressed, disgruntled, angry person, often whose only refuge is in getting drunk, to one who is alert and reasonably satisfied in using what he has for accomplishing at first tangible results and, later, the intangible but extremely important feelings of self-respect and satisfaction.

The original personality of the paraplegic before his injury has a great deal to do with his reaction after his injury. For example, it was found that those who reacted best were outgoing and unimagined, and usually came from a stable, closely knit family group. Patients who previously were extremely ambitious and those who were emotionally unstable tend to react poorly to this disability. Therefore, all efforts to intensify incentives to recover must be tailored to fit the individual.

The main emotional problems are as follows:

1. Depression over their condition, present in at least 45%.
2. Attitude of dependency with a fear of being abandoned, so that they may even show disturbance when treatment personnel are changed. There is often an acceptance of themselves as permanent burdens on the state and on their family.
3. Feelings of frustration. Even the most trivial activity, such as getting a glass of water, becomes a major task.
4. Wishful thinking, with the persistent hope that function will be restored. This leads to failure to work hard and develop compensatory abilities—"If I knew I were not going to get any better, I would work harder on my exercises."

Case: A paraplegic with very well developed shoulders and good possibilities for learning crutch walking refused to go to the clinic. It was found that he had not yet accepted the fact that his feet would never heal up. He had fantasies of walking again without crutches. He rejected crutch walking and other planned activities and exercises because he did not see the relation between them and the seriousness of his injury.

It is particularly important to be absolutely honest in what the patient can expect to be able to do. This is shown by the case of the amputees in the Army who had been told that their artificial limb would be as good as the one they had lost. When they found that this was not true, they often were bitter and resentful.

It can be seen that getting these men even interested is a long, hard pull and one in which it is particularly important to individualize all the psychological help that they

receive. We have found that the effective special motivations to recovery are

1. A desire to be independent rather than a burden, which in extreme form is shown by resentment to any helping hand.

2. A desire for re-entering into social participation, often symbolized by an attitude that their major incentive toward improvement is the promise of an automobile that will enable them to get around among people.

*Group Influences.*—Motivations are powerfully reinforced by all forms of group activity ranging from group therapy on the ward to full use of the special organizations for the various forms of disability. An example of the great influence of group activity is shown by the following excerpts from a patient's letters:

We have organized a basketball team of fellows in chairs. As you know we have several army and navy doctors on duty here and they consented to the first trial game. We put them in chairs and had a go of it. Results: We beat 16 to 6. We play full length quarters, 10 minutes each and also use full length of the court. For laughs and thrills, it's unbeatable—and there is one big point it brings out—we are not nearly as frail as some people would make us out to be. Our opponents have had as many spills as we and they are always amazed that we still have the strength at the end of the game to push ourselves back to the ward. Until we started playing basketball, we never had a sport that puts the emphasis on speed and guts and fast action. It has been one of the biggest finds in the rehab program because it is one game where we can match and even better our opponents. Until we found we could play basketball well, our only sports were purely sedentary with no live action and thus none of the sports filled the need for one game which could put those of us who really liked active sports back in their playing for all that we were worth.

Of course it is not a game for every paraplegic but there is just as big a percentage of paraplegics who will play as there are normal human beings. And as one of the paraplegics said after playing his first game, "I forgot all about my pain," so perhaps it even has some medical value to it.

From a later letter:

We have played recently in two of the city's big auditoriums. The fellows are all having enough

fun so that three nights last week we played to outside audiences. Two of the trips entailed 50-mile round trip drives in our cars and one was a 100-mile round trip. The guys all enjoy playing before the public and I think they would drive most any place they were offered.

This patient also has worked 5 months without missing a day in the brace shop of the hospital.

#### SUMMARY

Motivation is an extremely important factor in the recovery from illness and in overcoming disability. This is true in many cases of somatic illness and of organic injury, and its influence bears little relation to the gravity of the basic condition. In psychosomatic illness and in psychosomatic sequelæ of organic illness and injury, it is of the greatest importance.

Motivation must be inspired and intelligently directed by the physician and his associates on the therapeutic team. Too often its influence is disregarded; and too often it is misdirected by careless, superficial study of the case. The worst employment of this powerful factor, however, is when apprehension is unduly aroused in the patient by ill-advised comments or overcautious advice on the part of his physician.

The application of psychiatry in the fields of medicine and surgery is slowly gaining ground. The situation is yet far from satisfactory; but the scientific program of the recent meeting of the American College of Physicians reflects the increasing awareness of internists to the necessity for treating the mind as well as the body. But, until psychiatrists recognize that psychotics often suffer from somatic disorders—which is another story that might prove revealing—and until other physicians recognize that almost all of the organically ill and injured suffer from psychosomatic disorders to a greater or lesser extent, patients will be denied the full potentialities of medicine.

## AN EVALUATION OF "SEXUAL BEHAVIOR IN THE HUMAN MALE"<sup>1</sup>

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This book is published by a publisher of medical literature, includes tables titled "clinical," and purports to be a relatively exact description of a realm of behavior of particular interest to the psychiatrist. If we may accept his data, the clinical tables represent valuable referents for general diagnosis. The conclusions of the book relate to a fundamental aspect of human behavior and are so striking that most psychiatrists will be confronted with them sooner or later.

Bearing in mind the particular pertinence of these data to psychiatry and the claim to exactness in such a broad sphere of human action, it is especially important that the method used in arriving at the conclusions be carefully evaluated. This article is an attempt at a critical but dispassionate analysis of the method, the validity of these conclusions, and the interpretation which the authors place upon them.

The authors conclude that 85% of the total U. S. male population has premarital intercourse; nearly 70% has relations with prostitutes; between 30% and 45% has extramarital intercourse and 37% has some homosexual experience. In addition to such findings, they contend that science should revise its classifications of "normal" and "abnormal" in sexual conduct and that ". . . there seems to be no sound basis for the widespread opinion that the younger generation has become more active in its socio-sexual contacts. . . ." (p. 397).

### METHOD

It is indeed refreshing to find such careful elaboration of the method involved and a well-constructed rationale for each step in the process as is contained in this book. However, the very nature of the method either fails to reveal certain pertinent information or covers up possible evidence of

selectivity in the immediate sample. For example, nowhere in the book is a table given of the actual number of cases in each category. In addition, the method the authors say they use is not in strict accordance with the techniques actually used throughout the various chapters. Some examples of this are noted below.

The method used for gathering data was the interview, covering from 300 to 500 items recorded in code at the time of the interview. From the discussion and the evidence presented in the book, and from reports of individuals who have been interviewed, the interviewing technique is extremely effective, and the information on interviewing is a contribution in and of itself. The present study includes 5,300 white male case histories. The data are eventually to be classified into groups which are homogeneous for items in a twelve-way breakdown, including sex, race, marital status, age, age at adolescence, educational level, occupational class, occupational class of parent, rural-urban background, religious groups, religious adherence, and geographic origin. Because of the limited number of cases, however, the present work represents a population homogeneous for only 6 items: sex, race, marital status, age, educational level, and either rural-urban background or religious background.

### ACCUMULATIVE INCIDENCE TECHNIQUE

Obviously the 5,300 cases would not go far toward filling these categories if they were only used to represent the individuals at the time of the interview. The technique used for expansion of the data is, briefly, to treat each case as if it were an additional case falling within each previous age group or previous experienced category. Thus, a man who was 45 at the time of the interview would provide a case for each age group previous to that, and if he was married at the time of interview would constitute a case for

<sup>1</sup> Kinsey, A. C., Pomeroy, W. B., and Martin, C. E., *Sexual Behavior in The Human Male*, W. B. Saunders Co., Philadelphia, 1948.



the single tabulations in the years before he was married. The authors attempt to justify this technique upon the basis of evidence as to the persistency of sexual patterns from generation to generation, assuming that a man who was 15 years of age 30 years ago can be counted in the calculations as though he were, 15, 16, 17 . . . . 45 years of age today. This "accumulative incidence technique" is the basis for most of the generalizations regarding sexual behavior of the entire male population of the United States. It can be applied with least danger of error to determine if given individuals have engaged in specific acts once during their lifetime. However, since most people engage in multitudinous types of behavior, many of which are mutually contradictory, information about any one type is of little value in describing actual social relationships or patterns of behavior. Most people were infantile when they were infants, childish when they were children, and adolescent when they were in their teens, and such a technique would demonstrate these facts with reasonable accuracy. It could be used to demonstrate that 100% of the population is "selfish" (has engaged in selfish behavior), but it would also show that 100% of the population is "unselfish." With this technique one could demonstrate that well over 50% of the adult male white population is "exclusively unemployed" (have been unemployed for at least three years) and that over 90% is "exclusively employed," according to the same criteria. Thus the technique has serious limitations if it is used as a basis for attempts to describe human behavior rather than to enumerate specific acts.

To ascertain the number in any age group who are engaging in the specified activity ("active incidence"), use of the accumulative incidence technique would presumably necessitate a high degree of representativeness for all significant factors within the given age group, and persistence of the type of activity from time of first incidence to time of report. Since the data from one age category are included in others, the age categories are not independent and cannot be designated as random samples. Comparison of one age group with another necessitates a degree of representativeness which is not present.

#### DISPROPORTIONS IN SAMPLE

The authors admit (p. 33) that the validity of extending generalizations depends "fundamentally and unavoidably" upon representativeness of the sample, and that *all conclusions must be confined to precisely defined groups*. These necessary limitations are not embodied in the conclusions. The following figures indicating disproportions within the sample are approximations because of the unconscious or deliberate failure of the authors to include the actual numbers of cases involved in the various categories. Sixty-four percent of the sample is from males on the college level. Persons who attend college constitute only 12% of the total male population, so 88% of the weighting in projection to the total population derives from 36% of the sample, or approximately 2,000 cases. Those who are 20 years of age or over constitute 75% of the total population, but only 25% of the sample. Only 30% of the total male population 20 years of age or over is single, but in the sample, 78% of the males 20 years or over are single. The educational group which has the greatest disproportion between single and married also has the highest incidence rates in "homosexuality" and in other types of socially disapproved sexual activity. Similar large disproportions appear to prevail between *all categories* and the representative population, and between all categories within the sample itself. This relationship between pronounced disproportions and high (or low) incidence of types of sexual behavior could be coincidental, but the burden of demonstration of such coincidence rests with the authors. "Widowed or divorced" persons constitute only 3% of the married population between the ages of 20 and 50, but they constitute 20% of the married population (aged 20-50) in the sample. The "widowed or divorced" constitute 55% of the married sample of those between the ages of 30 and 50 who never attended high school. The representative proportion is 4%.

Distribution of the religious groups within the sample is also quite interesting. The proportions between sects are not too extreme, except for the high percentage of Jewish (16%) and small percentage of Catholic (12%). However, 80% of the persons in-

cluded in the sample are "inactive" Protestants, Catholics, or Jews, who do not attend church regularly or do not take active participation in organized church activities. "Active" Protestants, Catholics, and Jews are so few that they are omitted entirely from most of the computations and projections.

In projection to the total U. S. male population, the authors apply weighting according to proportions in the total population in terms of age, marital status, and educational level, but weighting is not applied for other admittedly significant categories, such as religious affiliation, degree of adherence to religion, and rural-urban differences. Disproportions and admitted error are most pronounced in the two groups which did not attend college. These constitute 88% of the population, but only 2,000 cases in the sample. The large effect of small numbers of cases with high percentages which receive 88% of the weight makes even a small disproportion within these groups of great significance. The manner in which selectivity of even a few cases within one of these lower educational groups can affect the conclusions regarding the "homosexual" activities of millions of males is illustrated below.

In addition to these disproportions, the weighting in the direction of single males is affected by the apparent failure of the authors to interpolate the percentage married at specific ages which are used in the data. Omission of this simple process gives even greater weight to the disproportions in the lower educational levels.

#### STRATIFIED SAMPLE

The authors attempt to evade these proportions by calling their process a "stratified sample." They claim that this procedure demands *more or less equal samples from each of the ultimate groups*. (Italicized in the text also, p. 92.) However, the size of the samples in the subgroups varies from less than 50 to several thousand. It appears that they accept the principle of the stratified sample only in setting a lower limit to the number of cases (50) which will be included in each subgroup. They indicate that experiments with samples of various sizes in relation to the total sample of subgroups and the

use of certain "pragmatic" tests enable them to arrive at optimum sample size 300. These tests include comparing the mean, median, incidence, "height of mode," "locus of the mode" (with some bizarre definitions of these parameters), and the range of various sample sizes with that of the largest possible sample. These procedures rest upon the assumption that the largest possible sample gives the best estimation of the population parameter and the task is to find the sample size which will be small enough to be handled and still give fairly accurate results. This assumption is accepted unquestioningly at one point in the process and rejected at another. Their strange procedure leads them to find that a sample of 300 is a better estimate of the population than a larger sample. They spend much effort to discover that measures of central tendency are independent of the size of the sample but that the range is not.

These few technical statistical errors are included to indicate that numerous similar errors are involved in the treatment of the data within the sample itself. These are in addition to the fundamental disproportions between the data included in the sample and that which would be found in any representative male population.

#### CHECKS FOR RELIABILITY OF SAMPLE

Checks on the reliability of recording include the following:

1. Rechecks—reinterviewing of individuals at later dates.
2. Comparison of reporting spouses.
3. Comparing results of various interviewers.

It is extremely difficult to evaluate the checks because of the nature of the presentation. The cumulative technique tends to make any bias consistent throughout the data, and comparing two arrays under this system is not equivalent to comparing two arrays wherein the individual items are allowed to fluctuate at random. To clarify this point, contemplate the difficulty one would have counting degrees of freedom in measuring goodness of fit under the cumulative technique.

Undoubtedly the crucial question is one of representativeness. One would suspect that

those who would, for instance, attend a lecture on sex would represent a selected audience, and in addition those who would volunteer out of that audience would introduce further selectivity. The authors also state that some of the cases were secured through "contact men." They express regret that they could not impress upon these contact men that they were not looking for only the most extreme cases but for the entire range of cases, from the most to the least active. The extreme effects of a slight amount of selectivity, especially in crucial high-incidence groups, is elaborated below. The data which the authors present to demonstrate representativeness are:

1. Comparison of partial sample with 100% samples.
2. Comparison of earlier series of interviews with later series.

Although sixty-two 100% samples were made, including "representative" groups such as members of college sororities, inmates of penal institutions, conscientious objectors, and hitch-hikers, 29 of the total were college groups. Only *one* 100% sample is used as a check on representatives of the partial sample. Only the college group was represented by as many as 300 cases (p. 95). Thus the lower educational groups which give 88% of the weight to the projections have not been checked by any 100% sample. In the one check which is made, the difference is greatest in relation to homosexuality, where the partial sample (which contributes much more weight to the conclusions) is appreciably higher in every age group. The partial sample shows 10.4% "homosexuality" (all categories) while the 100% sample shows only 5.7%.

Comparison of the earlier series of cases with the later series (those taken 1938-42 compared with those taken 1943-46) appears to be based upon the idea that if two independent units of a sample are taken covering the same data and no consistent bias appears between them, the sample is random. Higher incidence of "homosexuality" of as much as 30% is found at all ages over 12 in the earlier sample, and the authors describe this situation as "practically identity." The main point, however, is that this "test," like all the others, is merely an incestuous demon-

stration. It is possible to have a random sample of a larger biased sample of a statistical universe, and this possibility is not eliminated by any of the "tests" which the authors apply. With minor exceptions, the "tests" are in terms of the sample itself. These are some of the reasons why it is difficult to accept the major conclusions. Two of the questions which seem to have some bearing on the conclusions and which are not answered are:

1. Is the entire sample representative of anything but itself?
2. Since the "stratified samples" apparently are *not representative within the subgroups*, and do not include "more or less equal samples" according to age, education, marital status, religion or occupation, what strata do they represent?

Generalizations about the entire white male population of the United States are strongly and repeatedly emphasized. Two of the most striking interpretations—those in relation to the stability of sexual patterns and homosexual experience—will be analyzed. Some of the general limitations of the findings have been described above, and these limitations should be kept in mind in relation to the following analyses.

#### HOMOSEXUALITY

The authors emphasize (pp. 650-651) that 2 out of every 5 males that one may meet have had at least some overt homosexual experience; that from 47 to 58% of the males who remain single to the age of 35 have had homosexual experience to the point of orgasm; that one adult male out of every 4 has homosexual experience which is described as "distinct and continued"; that more than one of every 6 males (16-55 years of age) have at least as much of the homosexual as the heterosexual in their histories; and that one male in 10 in the white population is "more or less exclusively" homosexual.

These findings are presented as applying to the entire white male population of the United States despite limitations which were listed earlier, and those which are described below.

Only one 100% sample was available for use as a check upon the validity of the partial sample. This was in the college group, where

rates are comparatively low. The incidence of "homosexuality" was appreciably higher in the partial sample in every age group. In the only adult group included in the comparison, the partial sample contained an incidence of homosexuality which was almost twice (10.4% compared with 5.7%) as high. The authors admit (p. 153) that the variations are probably even greater on the other educational levels.

Comparison of the incidence of homosexuality in the series of interviews taken 1938-42 with those taken 1943-46 (p. 146) is also limited to single males of the college level. Incidence as much as 30% higher is found at every age from 12 onward in the series of cases taken earlier.

Two-thirds of the males in the United States who are 16 years of age or over have been married, and almost 85% of those over 30 years of age have been married. In the sample from which the percentage of "homosexuality" among all "adult" (16 years of age or over) males is derived, less than 15% of those over 15 have been married, and over 35% are still single at 30 years of age. In the educational group with the highest incidence (those who entered high school, but did not go beyond) 46% are still single at age 30, and those married are so few that they cannot be included in any age group. Over 80% of the incidence of *all categories of homosexuality* from "at least incidental homosexual experience" to "exclusively homosexual throughout their lives" is derived from "inactive" Protestants, one of 6 religious categories.

Apparently the authors consider all the limitations of their sample to be unimportant. These limitations are not only ignored in the conclusions but for some reason the authors are so thoroughly convinced that "homosexuality" is highly prevalent that they are anxious to compound any possible errors in almost any way which will increase the apparent incidence.

The authors emphasize (p. 665) that on the basis of the evidence (for example) at least 13% of the male population is "predominantly homosexual" (4+ on their scale of "homosexuality") and at least a third of the male population had "homosexual capacities." The figures from their own sample

indicate only 10 and 23% respectively (Table 150, p. 654), so they take the highest percentage of incidence in any age group and develop a number of rationalizations as to why the highest figure *should be* more nearly representative of actual conditions. At this point they apparently forget that the percentages refer to an activity which may have occurred no more than once during a lifetime and assume that it *is occurring* throughout the life of the individual.

Applying these same techniques and the same data, but using heterosexuality as the basis of the computations, would reveal that while 30% of all males have "at least incidental homosexual experience or reactions" over a 3-year period between the ages of 16 and 55, over 90% also have "at least incidental heterosexual experience or reactions." The authors emphasize that 13% of the population has more of the homosexual than the heterosexual in their histories for at least 3 years between the ages of 16 and 55, but the source data and techniques would also show almost 100% of the population had more of the heterosexual than the homosexual in their histories. This is an apparent paradox which is not faced by the authors.

Such procedures seem to be questionable when one realizes that a difference of only 40 cases, distributed from age 15 through age 30, in one of the major subgroups in which the error is admittedly greatest, would reduce the incidence of the "predominantly homosexual" by approximately 30% in this group.

Conclusions regarding "homosexuality" in the male population of the United States appear to rest on less than 500 cases in all degrees of "homosexuality." The conclusions are largely the result of a small, atypical segment of the population (males who remain single) plus virtual absence from the sample of all Protestants, Catholics, and Jews who attend church with any degree of regularity, plus unusual definitions of "homosexuality" and "adult." These factors conjoin so that only a few hundred selected cases lead to the remarkable conclusion (p. 665) that over 6 million adult males are "predominantly homosexual."

The findings are uncritically extended to



the entire male population and presented as established fact.

Persons with any homosexual experience are called "homosexual" in a manner which is definitely misleading, since the word has a fairly definite connotation in the minds of most readers. Since the bulk of the behavior referred to is preadolescent or adolescent homosexual "play" rather than a pattern of behavior which is carried over into adulthood, the distinction between "homosexual experience," "homosexual," and "homosexuality" should be maintained with much more care than it is in the book. By age sixteen, 31.6% of the population, according to the data (Table 139, p. 624), has had some homosexual experience. The peak incidence is only 37.5%, which is reached at age 19. In the main, then, the phenomenon under observation is "homosexual play" among preadolescents and adolescents rather than "homosexuality" as a pattern of life.

The crux of the matter of sexual behavior of any type is the pattern of life which it involves. Single instances or several instances are obviously of limited significance. The situation is analogous to criminality. A series of interviews would undoubtedly show that over 30% of the adult males in the United States have violated at least one criminal statute (speeding, etc.) at some time or other during their lives. Could anyone conclude from such findings that over 90% of the adult male population is criminal in any meaningful sense of the word?

#### STABILITY OF SEXUAL PATTERNS

According to the authors (p. 397), the sexual patterns of the younger generation are "nearly identical" with those of the older generation, and there is no sound basis for the widespread opinion that the younger generation is more active in its socio-sexual contacts. Unfortunately, the statement has little relationship to the data (Table 105, p. 412), and no significant relationship to whatever the actual situation may be.

The authors contend (p. 397) that only masturbation, nocturnal emissions, and petting show increases by the younger generation, and that these are not ordinarily considered indicative of increasing immorality.

Those activities (premarital intercourse and homosexuality) which usually are considered indicative of increasing immorality show no significant differences when the older generation is compared with the younger. So say the authors, but their own data seem to refute their statements.

If the members of the sample of the younger generation are representative of the males in the United States, approximately 83% will be married, 9% widowed or divorced (less than 5% if limited to the age groups actually compared), and 8% single after they pass age 33 and become members of the older generation. They should therefore be compared with an older generation having a similar marital distribution. The older generation which is used as a basis of comparison in the study includes (approximately) only 52% married, 17% widowed or divorced, and 21% single. Rates of prostitution (Clinical Tables 152, 3, 4) of the single are 4 times as high as those of the married, and "homosexuality" is 10 times higher. The widowed or divorced group has rates of prostitution which are twice as high as those of the married group, and both single and widowed or divorced groups have high rates of intercourse with companions.

The comparison is between an atypical older generation which has very high rates of premarital intercourse, intercourse with prostitutes, and homosexuality; and a younger generation which presumably should have *much lower rates*.

Comparison of older with younger generation (Table 105, p. 412) shows marked increases among single males in masturbation on the lower educational levels and small increases on the college level. "Petting to climax" increases markedly on all educational levels and age groups up to 20. Intercourse with companions increases markedly in all age groups of the 0-8 educational level and in the "adolescence to 15" age group on 9-12 educational level. Intercourse with prostitutes decreases. Homosexuality increases (up to 95%) over all age groups of those below the college level, but shows similar incidence on college level in both generations. The younger generation of married males at all ages and on all but the college level show large (as much as 75%) increases

in the incidence of extramarital intercourse. Small decreases occur in the college married group.

This pattern of comparison between the generations does *not* take the extremely high rates of violations of traditional sexual mores of the atypical older generation into account. When these are included in the comparison, little doubt appears to remain that even "Cassandras" have been *underestimating* the increase in violation of traditional sexual mores by the younger generation. However, only *one* of the 9 sub-groups in the older generation includes as many as 300 cases, and only 3 contain as many as 100 cases. It is questionable that any conclusions relative to changing standards of sexual morality can be hung on such a slim thread.

#### SOCIAL INTERPRETATIONS

The authors fail to appreciate that applications of the mores are, and always have been, in terms of social situations and of the status of individuals. It is not behavior as such which is universally condemned, but behavior by individuals of specific status under specific social situations. Thus killing of other human beings is not only allowed, but commended, in time of war. Even in time of peace "unwritten laws" operate to exonerate the husband who kills his wife's lover, or (usually) the policeman who kills the criminal. The status of children differs from that of adults, and that of females differs from that of males. A child who exposes himself in public is "cute," while an adult who does exactly the same thing *is* committing a serious violation of the mores. A college boy who has premarital sexual relations is "sowing his wild oats"; a college girl who does the same thing is condemned more severely. The situations are quite different, biologically, as well as economically and socially. Boys cannot become pregnant and bear children which, along with the mother, may become a burden on society as well as on the family. This statement does not commend nor condemn behavior, it is merely an indication of one of many relevant "facts" which the authors do not take into consideration.

The authors describe the significance of various types of sexual behavior in terms of a contrast between "normal mammalian behavior," "basic in the human animal," "normal among some other anthropoids" and that which is a result of "the tyranny of the mores" by the "victims of the mores." Some other examples of behavior which is abnormal, if "normal" is derived from behavior of infrahuman mammals, are speech; abstract thought; writing; driving automobiles; wearing clothes; eating cooked food; and making studies of sexual behavior. This list could be extended almost indefinitely. It would include all but an infinitesimal segment of human behavior. Sexual behavior, even more than most other forms of behavior, is inescapably a matter of social concern; hence it is controlled by folkways, mores, and statutes. As with eating, sleeping, communicating, thinking, cooperating, competing, and most other items of behavior, sexual practices and habits of human beings differ from those of animals without cultures, and to evaluate sexual practices in terms of "normal mammalian behavior" could, by extension, result in designating all culturally affected behavior "abnormal."

It is unfortunate that the authors have made so many extreme statements, and such misleading statements with such little evidence in so many cases. The study includes some worth-while material and, despite its limitations, has potentialities which could make it a significant contribution to the understanding of one segment of behavior. This contribution cannot be made until the authors refrain from their continued attempts to make startling generalizations which are not justified by the technique nor the data. To make this contribution, the authors will have to discard the idea that they are the first individuals in thousands of years of history to realize that the actualities of sexual behavior, precisely like the actualities of every other sort of behavior, fall somewhat short of the ideals. Such a situation does not necessarily lead to the conclusion that the ideals are wrong, nor that they should be abandoned.

## CEREBRAL BLOOD FLOW AND METABOLISM IN SCHIZOPHRENIA

### THE EFFECTS OF BARBITURATE SEMI-NARCOSIS, INSULIN COMA AND ELECTROSHOCK<sup>1</sup>

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Quantitative measurement of the blood flow and the metabolism of the living brain in psychotic states is a fundamental prerequisite to a better understanding of the possible metabolic derangements associated with these conditions. Unfortunately the lack of a suitable method has hitherto barred this approach. Determination of the cerebral arteriovenous oxygen difference is of little value in this problem since this measurement is determined by both blood flow and metabolism, neither of which can be assumed to be normal on the basis of *a priori* reasoning. The recent development by Kety and Schmidt (1) of a technique for the quantitative measurement of cerebral blood flow in unanesthetized man offers a method for determining whether a primary defect in total cerebral circulation or metabolism exists in the psychoses, and the effects of various therapeutic procedures upon these important functions.

**Methods.**—In all, 23 schizophrenic patients were studied. Cerebral blood flow was measured by the nitrous oxide technique (8). This necessitates the insertion of needles into the femoral artery and superior jugular bulb from which samples of blood are drawn over a 10-minute period while the patient breathes a mixture containing 21% oxygen, 64% nitrogen, and in addition 15% nitrous oxide,

a concentration of nitrous oxide low enough to be without appreciable effect. From the shape of the arterial and internal jugular nitrous oxide blood curves cerebral blood flow can be calculated. Mean arterial blood pressure was recorded directly from the femoral artery by means of a mercury manometer. Blood samples were analyzed for oxygen and carbon dioxide contents by the Van Slyke-Neill technique (2), for pH potentiometrically by means of a glass electrode at 37° C.

Cerebral metabolism was estimated in terms of oxygen or glucose consumption as the product of the cerebral blood flow by the respective arteriovenous difference. In the case of pentothal seminaresis, studies were done 20 minutes after an initial control blood flow was obtained. Control blood flow determinations for insulin coma and hypoglycemia were obtained on the previous day. The nitrous oxide technique measures cerebral blood flow as an integrated function over a 10-minute period and requires a fairly steady state. For this reason as well as the necessity that the patient breathe the gas mixture and keep needles in place it was not possible to make measurements during convulsions induced by electroshock. Rather, a control study was completed and the needles withdrawn; a convulsion was then produced and as soon thereafter as the patient relaxed the needles were reinserted and a second determination was performed. It was usually possible to begin this determination 10 minutes after the onset of convulsions.

### RESULTS AND DISCUSSION

The results obtained in 30 control determinations on 22 patients are presented in Table 1 and compared with similar data obtained by Kety and Schmidt in 35 observations in normal young males (3). It is seen that the cerebral blood flow and cerebral oxygen consumption in the schizophrenics

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.

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<sup>2</sup> National Research Council Fellow in Anesthesiology.

TABLE 1  
SCHIZOPHRENIA; RESTING VALUES

Patient	Age, Sex	Arterial blood				Internal jugular blood					Cerebral			Schizophrenia	
		CO <sub>2</sub> content vol. %	CO <sub>2</sub> tension mm. Hg	O <sub>2</sub> content vol. %	pH	CO <sub>2</sub> content vol. %	CO <sub>2</sub> tension mm. Hg	O <sub>2</sub> content vol. %	pH	A-V O <sub>2</sub> vol. %	CRQ	CBF cc/100g/min.	CMR cc. O <sub>2</sub> /100g/min.	Type	Duration of hospitalization years
J. McH.	31 M	48.2	37	19.8	7.45	54.4	45	12.8	7.41	7.0	0.87	48	3.4	Catatonic	10
V. Z.	31 M	54.6	45	16.2	7.40	59.9	53	10.7	7.36	5.5	0.96	50	2.8	Catatonic	3
R. B.	40 M	50.5	41	19.0	7.43	56.4	50	12.3	7.38	6.7	0.88	57	3.8	Catatonic	16
R. B.	40 M	49.3	48	17.9	7.33	55.2	56	11.6	7.30	6.3	0.94	61	3.8		
W. R.	30 M	52.8	44	20.0	7.42	57.9	50	14.7	7.39	5.3	0.96	59	3.1	Simple	4
W. R.	30 M	49.5	42	19.8	7.40	54.9	50	14.2	7.37	5.6	0.97	51	2.9		
W. R.	30 M	48.6	44	19.8	7.38	53.6	49	12.6	7.36	7.2	0.70	47	3.4		
J. Sk.	37 M	52.7	44	17.3	7.40	57.8	53	11.8	7.35	5.5	0.93	57	3.1	Paranoid	11
J. Sk.	37 M	53.3	41	16.8	7.44	58.4	47	11.0	7.43	5.8	0.88	68	3.9		
G. A.	31 M	44.5	38	16.3	7.40	49.6	44	11.2	7.36	5.1	1.00	62	3.2	Paranoid	4
U. P.	21 M	42.5	31	19.5	7.47	49.7	41	11.2	7.41	8.3	0.87	36	3.0	Paranoid	5
U. P.	21 M	40.4	29	19.2	7.50	51.5	40	11.1	7.45	8.1	1.37	52	4.2		
W. L.	34 M	49.0	43	18.0	7.39	55.1	52	12.0	7.35	6.0	1.02	61	3.7	Paranoid	3
W. L.	34 M	49.7	48	17.9	7.34	56.2	58	11.2	7.31	6.7	0.97	56	3.8		
G. H.	29 F	47.1	37	17.9	7.44	53.5	44	10.1	7.41	7.8	0.82	44	3.4	Hebephrenic	5
E. F.	42 M	48.3	41	16.4	7.40	55.4	49	9.1	7.36	7.3	0.98	45	3.3		
G. C.	33 F	51.4	43	17.4	7.41	57.5	51	10.7	7.37	6.7	0.91	51	3.4	Catatonic	9
C. A.	27 M	58.3	46	13.5	7.41	63.1	54	8.0	7.36	5.5	0.87	59	3.2	Catatonic	4
P. W.	33 F	54.3	46	18.5	7.41	60.0	54	12.5	7.37	6.0	0.95	49	2.9	Catatonic	11
E. McC.	56 F	49.3	38	13.0	7.42	54.9	45	7.3	7.39	5.7	0.98	53	3.0	Hebephrenic	15
C. O.	34 F	47.0	41	16.6	7.39	52.5	51	11.4	7.32	5.4	1.02	60	3.2	Catatonic	11
E. G.	54 M	50.4	43	15.2	7.39	56.4	54	9.2	7.32	6.0	1.00	53	3.2	Catatonic	26
E. B.	44 M	50.4	45	19.2	7.39	55.0	53	14.0	7.34	4.6	0.89	64	2.9	Simple	4
E. B.	44 M	51.8	47	18.7	7.38	58.2	55	12.5	7.35	6.2	1.03	44	2.7		
R. C.	35 F	50.2	46	17.9	7.36	55.2	55	13.4	7.32	4.5	1.11	64	2.9	Paranoid	6
L. R.	25 M	50.6	45	16.9	7.38	58.2	58	10.2	7.32	6.7	1.13	47	3.1	Simple	8
S. S.	34 M	52.6	45	17.0	7.40	57.6	53	10.7	7.35	6.3	0.79	58	3.7	Paranoid	8
S. S.	34 F	50.2	39	16.3	7.43	56.9	48	10.8	7.39	5.5	1.22	64	3.5		
M. T.	46 M	51.6	43	17.2	7.40	58.3	53	10.0	7.36	7.2	0.93	48	3.5	Catatonic	9
L. B.	19 M	50.3	52	17.8	7.30	55.8	62	13.2	7.27	4.6	1.20	43	2.0	Paranoid	<1
Mean		50.0	42	17.6	7.40	56.0	51	11.4	7.36	6.2	0.97	54 ±7.63	3.3 ±.43		
Mean		49.5	43	17.3	7.39	55.8	52	10.9	7.34	6.2	1.02	54 ±8.9	3.3 ±.43	Normal males 35 observations	

CRQ—Cerebral respiratory quotient.

CBF—Cerebral blood flow.

CMR—Cerebral metabolic rate.



are identical with the normal, nor do any of the measurements made show a significant deviation from the normal. If the patients are divided into two groups showing respectively acute and chronic aberrations no significant difference between the groups appears. On the basis of these data a generalized change in circulation or oxygen utilization by the brain of schizophrenics may safely be ruled out although there remains the possibility that local disturbances confined to small but important regions may still occur since the method used yields only mean values for the entire brain. Furthermore although over-all oxygen utilization may be normal there may be qualitative aberrations in any of a vast array of metabolic processes which would remain undetected. However, with the means for measuring cerebral blood flow now available, it becomes possible to determine quantitatively the utilization or production by the brain of any substance capable of accurate analysis in arterial and internal jugular venous blood.

#### SEMINARCOSIS PRODUCED BY BARBITURATES

Table 2 illustrates the data obtained on 8 patients before and during the seminarctic state produced by the intravenous administration of sodium pentothal or sodium amytal. Sufficient drug was administered intravenously to produce marked clinical change in the patients: marked increase in accessibility in the paranoid patients, and spontaneous verbalization in previously mute catatonics. It is to be noted that at no time did the patient lose consciousness. There was no significant change in cerebral blood flow, cerebral metabolism, nor in any of the other functions studied.

#### HYPOGLYCEMIA AND COMA INDUCED BY INSULIN

The results of our investigations in hypoglycemia and insulin coma in schizophrenic patients are given in Table 3. Our results corroborate the fall in oxygen and glucose arteriovenous differences observed by others (4, 5) but, in contrast to the suggestion of Loman and Myerson(6) that cerebral blood

flow is diminished in hypoglycemia, we found that the cerebral blood flow is well maintained. The measurement of cerebral blood flow together with arteriovenous oxygen and glucose differences permit us to calculate both oxygen and glucose consumption. As the arterial blood sugar falls there is a progressive fall in cerebral glucose utilization and oxygen consumption. In deep insulin coma the glucose consumption has fallen 83% while oxygen utilization has decreased only 45%. The expected ratio of  $O_2$  to glucose utilization if all the  $O_2$  were being used to burn glucose would be 0.75. In the resting state this ratio is 0.77, additional evidence that glucose is the only foodstuff of the brain normally. As hypoglycemia develops this ratio increases, indicating either the utilization of some other foodstuff or consumption of the carbohydrate stores of the brain itself.

#### THE POSTCONVULSIVE STATE

In Table 4 are summarized the changes found in 7 patients during the period from 10-20 minutes after a generalized convulsion induced by electroshock. The changes consist of a severe acidosis characterized by a sharp drop in  $CO_2$  content and pH, probably due to the severe muscular exercise plus anoxia which would augment the anaerobic production of lactic acid. There is a moderate fall in cerebral oxygen consumption and a marked decrease in cerebral blood flow. The exact cause of the decrease in circulation is somewhat obscure although the constant blood pressure and the increased A.V. oxygen difference would indicate that it was neither extrinsic to the brain nor dependent on the decreased metabolism. Data from other studies(7) indicate that the response to changes in carbon dioxide tension of the magnitude encountered here would be about an 18% reduction in cerebral blood flow. The decreased pH would tend to counteract even this effect. The decrease in cerebral circulation can be explained only partially on the basis of the reduced carbon dioxide tension, for the circulatory reduction under these circumstances is 36%. The increased arteriovenous oxygen difference is probably related to the decrease in cerebral blood flow.

TABLE 2  
EFFECTS OF PENTOTHAL SEMINARCOSIS ON ARTERIAL AND CEREBRAL VENOUS BLOOD CONSTITUENTS, CEREBRAL BLOOD FLOW, AND CEREBRAL OXYGEN CONSUMPTION

Patient Diagnosis	Age	Response to Pentothal	Arterial blood						Internal jugular blood						Cerebral													
			CO <sub>2</sub> content vol. %		CO <sub>2</sub> tension mm. Hg		O <sub>2</sub> content vol. %		pH		CO <sub>2</sub> content vol. %		CO <sub>2</sub> tension mm. Hg		O <sub>2</sub> content vol. %		pH		A-V O <sub>2</sub> vol. %		CRQ		CBF cc/100g./- min.		CMR cc. O <sub>2</sub> 100g./min.			
			C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P
J. McH. Catatonic	31	E	48.2	49.2	37	36	19.8	18.7	7.45	7.47	54.4	56.3	45	46	12.8	11.9	7.41	7.42	7.0	6.8	0.87	1.04	48	42	3.4	2.9		
V. Z. Catatonic	31	G	54.6	53.7	45	43	16.2	15.7	7.40	7.41	59.9	60.0	53	53	10.7	9.6	7.36	7.36	5.5	6.1	0.96	1.03	50	46	2.8	2.8		
R. B. Catatonic	39	F	50.5	53.2	41	40	19.0	18.3	7.43	7.45	56.4	59.3	50	50	12.3	11.3	7.38	7.40	6.7	7.0	0.88	0.87	57	57	3.8	4.0		
W. R. Simple	30	G	52.8	52.1	44	41	20.0	19.8	7.42	7.44	57.9	58.2	50	50	14.7	13.8	7.39	7.39	5.3	6.0	0.96	1.02	59	57	3.1	3.4		
J. Sk. Simple	37	F	52.7	53.4	44	47	17.3	16.9	7.40	7.38	57.8	58.4	53	56	11.8	11.3	7.35	7.33	5.5	5.6	0.93	0.89	57	60	3.1	3.4		
G. A. Paranoid	31	G	44.5	48.1	38	41	16.3	16.0	7.40	7.38	49.6	53.3	44	47	11.2	10.2	7.36	7.36	5.1	5.8	1.00	0.90	62	55	3.2	3.2		
U. P. Simple	21	G	42.5	47.5	31	40	19.5	18.6	7.47	7.41	49.7	53.6	41	48	11.2	12.7	7.41	7.36	8.3	5.9	0.87	1.03	36	50	3.0	3.0		
W. L. Paranoid	34	E	49.0	49.5	43	44	18.0	17.7	7.39	7.38	55.1	56.1	52	54	12.0	11.6	7.35	7.33	6.0	6.1	1.02	1.08	61	56	3.7	3.4		
Mean: Early schizo.	-	-	48.4	50.9	40	41	18.3	17.7	7.42	7.43	55.1	56.9	49	51	12.1	11.6	7.36	7.37	6.2	6.2	0.94	0.98	54	53	3.3	3.3		

C—Control.

P—Pentothal or Amytal.

CRQ—Cerebral respiratory quotient.

Response to pentothal: E—excellent.

F—Fair.

G—Good.

CBF—Cerebral blood flow.

CMR—Cerebral metabolic rate.

C—Control. P—Pentothal or Amytal. CRQ—Cerebral respiratory quotient. CBF—Cerebral blood flow. CMR—Cerebral metabolic rate.  
Response to pentothal: E—excellent. F—Fair. G—Good.

TABLE 3  
EFFECTS OF INSULIN HYPOGLYCEMIA AND COMA ON ARTERIAL AND CEREBRAL VENOUS BLOOD CONSTITUENTS, CEREBRAL BLOOD FLOW, AND CEREBRAL OXYGEN CONSUMPTION

Arterial										Cerebral																									
Patient	Blood pressure			Glucose			O <sub>2</sub>			CO <sub>2</sub>			pH			A-VO <sub>2</sub>			A-Vgl			CRQ			CBF			CMRO <sub>2</sub>			CMRgl				
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III					
E. B.	95	79	..	73	23	..	19.2	18.8	..	50.4	48.2	..	7.39	7.33	..	5.2	4.7	..	6	6	..	0.89	1.04	..	64	58	..	3.3	2.7	..	3.8	3.5	..		
R. C.	78	84	..	64	20	..	17.0	18.3	..	50.2	50.7	..	7.36	7.29	..	4.5	3.8	..	5	5	..	1.11	0.95	..	64	68	..	2.9	2.6	..	3.2	3.4	..		
L. R.	88	89	79	56	16	..	16.9	16.7	13.3	50.6	53.0	56.3	7.38	7.41	7.39	6.7	4.4	1.5	5	8	1.5	0.3	1.13	1.20	1.33	47	73	72	3.2	3.2	1.1	3.8	1.1	0.2	
S. S.	..	..	66	65	..	..	..	..	18.0	52.6	..	44.4	7.40	..	7.39	6.3	..	..	8	3.5	..	0.79	..	..	58	..	47	3.7	..	3.0	4.0	..	1.6		
L. B.	100	90	115	113	18	..	9	16.1	17.8	17.3	56.6	50.3	56.5	7.49	7.30	7.39	6.6	4.6	1.95	11	3.0	1.7	0.81	1.20	0.49	59	43	1113	3.9	2.0	2.2	0.5	1.3	1.9	
C. R.	..	..	85	..	..	..	..	..	..	..	..	..	42.4	..	..	7.30	..	..	..	..	0.3	..	..	..	..	..	68	..	..	1.8	..	..	0	..	..
C. R.	..	..	90	..	..	..	..	..	16.6	..	..	..	54.5	..	..	7.42	..	..	..	..	0	..	..	..	..	..	63	..	..	1.6	..	..	..	..	..
Mean	94	85.5	93	74	19	8	17.4	17.9	16.6	52.1	50.6	50.8	7.40	7.33	7.38	5.9	4.4	2.8	8	3.9	1.2	0.95	1.10	0.92	58	61	62.5	3.4	*2.6	*1.9	4.4	*2.3	*0.8		

I—Control. II—Hypoglycemia. III—Coma.

\* Indicates statistically significant changes.

† Not included in the mean.

CRQ—Cerebral blood flow.

CMRO<sub>2</sub>—CCO<sub>2</sub>/100 g./min. mg. glucose/100 g./min. CMRgl—

CMR—Cerebral metabolic rate.

† Not included in the mean.

I—Control. II—Hypoglycemia. III—Coma.

\* Indicates statistically significant changes.

CRQ—Cerebral blood flow.

CMR—Cerebral metabolic rate.

mg. glucose/100 g./min. CMRgl—100 g./min.

TABLE 4  
EFFECTS OF ELECTROSHOCK CONVULSIONS ON ARTERIAL AND CEREBRAL VENOUS BLOOD CONSTITUENTS, CEREBRAL BLOOD FLOW, AND CEREBRAL OXYGEN CONSUMPTION

Patient	Minutes after conv.	Arterial						Internal jugular						Cerebral													
		CO <sub>2</sub> content			pCO <sub>2</sub>	O <sub>2</sub> content	pH	CO <sub>2</sub> content			pCO <sub>2</sub>	O <sub>2</sub> content	pH	A-VO <sub>2</sub>			CRQ	CBF	CMR								
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II								
J. Sk.	11	77	78	53.3	33.5	41	39	16.8	17.9	7.44	7.24	58.4	40.9	47	49	11.0	9.7	7.43	7.22	5.8	8.2	0.88	0.90	68	36	3.9	3.0
W. L.	12	75	83	49.7	23.8	48	39	17.9	19.1	7.34	7.08	55.2	31.9	58	46	11.2	10.9	7.31	7.03	6.7	8.2	0.97	0.99	56	38	3.8	3.1
R. B.	13	102	93	49.3	23.5	48	37	17.9	18.8	7.33	7.10	55.2	32.7	56	60	11.6	9.5	7.30	7.02	5.3	9.3	0.94	0.99	61	40	3.8	3.7
L. B.	31	100	97	56.6	43.6	52	38	16.1	15.7	7.49	7.38	62.0	50.0	62	48	9.5	7.9	7.42	7.33	6.6	7.8	0.81	0.82	59	41	3.9	3.2
S. Se.	10	109	114	50.2	29.3	39	35	16.3	17.6	7.43	7.23	56.9	37.2	48	49	10.9	9.3	7.39	7.18	5.4	8.3	1.24	1.00	64	38	3.5	3.1
U. P.	13	80	73	40.4	26.4	29	29	19.2	19.7	7.50	7.29	51.5	36.1	40	47	11.1	10.0	7.45	7.20	8.1	9.7	1.37	1.00	52	33	4.2	3.2
W. R.	10	93	91	49.5	26.9	42	39	19.8	20.4	7.40	7.15	54.9	34.0	50	53	14.0	13.5	7.37	7.11	5.8	6.9	0.93	1.03	45	30	2.6	2.1
Mean		91	90	49.9	29.6	43	36	17.7	18.5	7.42	7.21	56.4	37.5	52	50	11.3	10.1	7.38	7.16	6.4	8.3	1.02	0.95	58	37	3.7	3.1

I—Control, II—Postconvulsion, CRQ—Cerebral respiratory quotient, CBF—Cerebral blood flow, CMR—Cerebral metabolic rate.

I—Control. II—Postconvulsion.

CRQ—Cerebral blood flow.

CMR—Cerebral metabolic rate.

## SUMMARY

Studies by the use of the nitrous oxide technique on 22 schizophrenic patients show no deviation from values obtained in normal young males for cerebral blood flow and oxygen consumption.

A clinically significant change in 8 patients given sodium pentothal or amytal intravenously is not associated with a measurable change in cerebral blood flow or cerebral oxygen consumption.

Insulin hypoglycemia and coma is associated with a progressive decrease in cerebral utilization of oxygen and blood glucose, the cerebral circulation remaining unimpaired. The fall in blood glucose utilization is greater than that of oxygen.

Electroshock is followed by a moderate decrease in metabolism and a marked decrease in cerebral blood flow in the face of a severe acidosis.

Although there were no demonstrable deviations from the normal in this group of schizophrenic patients, our experience with this technique leads us to believe that it is

worthy of extensive application in the study of the metabolic derangements in the brain associated with mental disease. It makes possible a new approach to psychiatric disorders, and gives the means of quantitatively determining the utilization or production of any substance capable of accurate analysis in the arterial and internal jugular venous blood.

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## SCHIZOPHRENIC SYNDROMES AS FRUSTRATION REACTIONS<sup>1</sup>

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It is commonly assumed that symptoms characteristic of the paranoid form of schizophrenia are pathognomonic of that disease. We grant that recognition of the prepsychotic state (seclusiveness, emotional poverty, loss of interest in the environment, and vegetative symptoms) is often difficult and that differentiation of it from a psychoneurosis is at times almost impossible, but when delusions appear one usually is satisfied that schizophrenia is at hand and that a chronic disease of devastating import is established. The authors propose to show that in certain instances the symptoms mentioned are nothing more than a frustration reaction and that restoration in such cases is possible in the early stages by removal of the frustration.

We do not imply that all frustration reactions are schizoid or that all mild cases of schizophrenia are frustration reactions. But we believe that there is a group of patients in which schizophrenic symptoms are merely the response to frustration.

If our concept of this psychopathological mechanism is correct, functional psychosis on the basis of frustration occurs only in predisposed individuals whose neurogramme reaction patterns are established. Such patients will develop psychotic reactions to all types of frustrating situations when these become sufficiently severe. Once the psychosis is established, however, we would not ordinarily expect it to disappear simply on removal of the frustration situation. A functional psychosis is morbidly engendered. The precipitating cause is an inadequate or unreasonable stimulus, differing from psychoneurosis in which the precipitating cause, when found, is reasonable and adequate within the limits of reality. We expect the established psychotic pattern to continue even though the precipitating cause is removed. The inadequate cause is sufficient,

as a trigger mechanism, to set off the charged neuronal pattern in the same way that a slight pull on the trigger discharges a flame thrower.

However, the removal of inadequate cause should not suffice to convert the pathological engrammes to normal status and we expect the psychosis to continue. A group of cases has been selected in which the converse seems to be true, the removal of the frustration situation being followed by immediate and rapid recovery. To the authors these recoveries seem more than coincidental. In at least one case the illness could be reestablished experimentally simply by reintroducing the frustration situation, and remission secured by its removal. The following 5 cases of a series are given as examples of the "schizophrenic frustration syndrome."

*CASE 1.—Woman of 36, depressed, sleepless, losing weight, confused. Publicly humiliated. Delusions of reference. Complete recovery by one month's delayed honeymoon 8 years after marriage.*

Mrs. S. J., aged 36 years, married 8 years, came under observation in May 1944 complaining of "feeling terrible" and because of a general inadequacy with fear and palpitation. She interpreted the condition as influenza, which she claimed to have had for 7 months.

After consultation with her husband and repeatedly with the patient, the following history was obtained. She was the daughter of a Jewish man and a gentile woman and she was sensitive about her extraction. She wanted to marry a gentile and with the man of her choice established sex relations before marriage. She precipitated her marriage by telling him that she was pregnant. They arranged a marriage in two weeks but she menstruated just before the day set for the wedding. The marriage was performed nevertheless but the husband always had felt, without telling her so, that he had been tricked. To avoid a feeling of guilt he had gone through with the bargain and had been fairly well satisfied. She claimed to have had a miscarriage two months after marriage but of this the husband had never heard anything. She had never had an orgasm but had tried to pretend that their relations were satisfactory. After marriage she continued her former occupation as saleslady and bookkeeper. She was an amateur pianist but when she attempted to turn professional she was no longer asked to play and suffered considerable frustration and wounded pride.

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.

The husband was a plodder in business. He was a successful printer and also kept books for a concern in his spare time. He husbanded his money carefully and they never had gone away together even on a honeymoon. Now 8 years had elapsed without any sort of major relaxation. He gave his wife little attention and treated her according to propriety and the dictates of duty.

When the patient began to show signs of nervous trouble she consulted a physician who said she was "run down" and treated her with hematinics. But she developed periods of depression, became introspective and retrospective and debated what to make of her life. This process had a destructive effect on her mental equilibrium. In her own words, "When I started to bring things out in the open I collapsed." She feared to be alone, could not listen to the radio or concentrate on reading. When she even thought about their sex life her heart pounded. She attempted to have an "out and out talk" with her husband about their marital relations but that talk resulted in making her confused and she could not sleep for two weeks. She lost considerable weight and could not eat.

General physical examination showed a little evidence of myxedema, and neurological examination showed anisocoria, but that was all. She was given small doses of thyroid substance and (for sleep) sodium amytal. Efforts were made to secure a better understanding between husband and wife; the husband was given the burden of displaying more genuine love.

After a month the patient returned to report a little improvement but she still complained of tightness about the head and base of the skull. Her husband reported that she was more adequate.

Three weeks later a most unfortunate incident occurred on a street car. The patient was returning home in the late afternoon and occupied a double seat alone. She admitted having sprawled out somewhat to discourage anyone else from sitting with her. Then a large woman entered and paused at the seat; she did not speak but indicated by her actions that she wanted to sit down. The patient for a moment could not decide whether to sit on the window side or on the aisle side of the seat. When the large woman moved to take the window side the patient became negativistic and slid over. The large woman then sat down on the outside and partly on the patient's coat. The patient rather disagreeably pulled at her coat and asked, "May I please have my coat? You are sitting on it." The large woman thereupon exploded and cursed the patient as a Jew. She ended by saying, "Hitler had the right idea after all." The patient shrank and remained silent.

That evening she got her husband to take her to a party where, contrary to her usual behavior, she became intoxicated. The next morning she had a bad "hang-over" and came to the doctor's office in the afternoon. She now had delusions of reference, complaining of being conspicuous on the street and of being watched. She said there seemed to be a different meaning to everything.

At this point one might easily conclude that a

schizophrenic breakdown was present and that sanitarium care was indicated. But the doctor felt that such was not clearly the case and that a breakdown might be entirely averted. For this reason the husband was sent for. He was told to take his wife on a belated honeymoon and that if he failed to do so a complete breakdown was imminent. He rose to the occasion and took her to one of the best hotels in San Francisco where he championed her cause at every turn. When they were assigned to a small and poor room he went to the management and bellowed that he was on his honeymoon and could not have his bride so shabbily treated. He obtained a large and well-appointed front room. They remained a month. The husband assiduously devoted his time and gallantry to his wife. For the first time in their acquaintance she had his undivided attention and love.

When they returned she had gained 20 pounds in weight and was well. Her self-respect had been completely restored; she had poise and a fine personality.

Three weeks later she came in to ask advice about her husband. He was worried "about business" and was sleeping poorly. He was brought in and was found to be in a depression. The situation was now reversed; the former patient took care of her husband and saw him through two months of depression. He recovered and she has remained well for 30 months through many trials because of reorganization of her husband's business.

*CASE 2.—Schizophrenic syndrome occurring during period of worry over husband in service and illness of child. General symptoms of schizophrenia with paranoid symptomatology. Recovery with brief psychotherapy.*

R. I. S., a 23-year-old married white woman, was admitted to the psychopathic division of the Los Angeles County General Hospital May 5, 1945, on petition alleging mental illness filed by her sister, who stated the patient had been ill for 2 weeks prior to entering the hospital and gradually had been getting worse.

The patient complained that she had no appetite, that she gagged when she tried to eat and suffered from soreness in her stomach. She said she had lost interest in life, did not care for her child, for her mother, or for any of the members of her family. Her sister added that she refused to follow her doctor's instructions, and that she had threatened to take her mother's life as well as her own. The patient repeated over and over there was something in the back of her head saying, "No, No!"

Family history: Two brothers living and well. Both parents in good health.

Personal history: The patient had been married 4½ years and had one child 2½ years of age. She was graduated from high school at the age of 18. Her religion was given as Protestant and it was stated that she was temperate in habits. At the age of 5 she suffered from "inflammatory rheumatism." There was a period of amenorrhea for 3 months before her pregnancy. It was reported that she had never been strong physically but that there had

never been any previous mental disorder. Her husband had been inducted into the military service approximately one year before her admission to the hospital.

Although the acute symptoms of mental disorder began about 2 weeks prior to admission, it was stated by the patient's mother that since her husband's induction into the military service she had been quite listless and had seemed to suffer from loss of energy. She had not heard from her husband for some time and had been very much concerned over his welfare. The patient's mother stated that her daughter had brooded over the husband's absence and had worried about him unreasonably and incessantly. She had also worried over the condition of her baby who had developed a hernia at the age of 15 months and recently had an appendectomy and herniorrhaphy.

On admission to the hospital the patient was quite apathetic and confused. She stated she did not want to have anything to do with her husband and baby but could not understand why she felt this way. She stated there was something in the back of her head directing her to do the things she did. It had directed her to attempt suicide and also not to eat. The general intellectual resources were essentially intact. Insight was diminished but not absent. Other than a degree of malnutrition the patient showed no physical abnormalities. Laboratory examinations revealed nothing abnormal.

A diagnosis of schizophrenia, paranoid type was made. After having been in the hospital for one week the patient had improved markedly, stated that she felt very much better, recalled that she had said "strange things" but stated that now she did not mean them. Her general condition improved in all respects and she was sent to an open rest home for further convalescence upon leaving the hospital May 10, 1945. To date she has shown considerable further improvement due, she believes, to the conviction that her husband will soon be returned from military duty. At an interview one month after admission to the hospital she appeared animated and interested, and showed no signs of her previous mental symptoms.

*CASE 3.—Schizophrenic syndrome appearing during attempts to modify or abstain from homosexual relationships. General symptoms of schizophrenia with paranoid symptomatology. Remissions with shock treatment. Recurrences during periods of homosexual deprivation. "Permanent" remission since insight into homosexual adjustment.*

The patient, L. S., a 32-year-old white man, was admitted to the psychopathic division of the Los Angeles County General Hospital October 19, 1936, on petition of his mother, who stated that the patient complained of hearing "a jumble of voices" in his head at night, and that they awakened him and called his name. He complained to her that people on the street looked at and made remarks about him but that he had learned to disregard this. He stated that he was extremely depressed and exhausted and often contemplated suicide. He had had a previous period of state hospital care at Patton

(California) State Hospital from December 9, 1935 to February 9, 1936.

Family history: Father was deceased, cause unknown. The patient lived with his mother who was in good health. One half-brother and one sister, both in good health.

Personal history: The patient was single, a college graduate but not employed regularly since leaving college. He had worked at irregular intervals as a dramatics teacher for 10 years. There had been periodic overindulgence in alcohol but this had never become a major problem. The previous medical history was irrelevant.

On October 24, 1936, the patient was sent to Norwalk (California) State Hospital, where he remained for several months. He was readmitted to the Los Angeles Psychopathic Hospital October 28, 1940, after having been apprehended by police officers on information that he was loitering around men's and women's toilets at a market. He was reported to have remarked to several people that he would like to commit "acts of perversion on young girls." On admission he was fearful and apprehensive and stated that everyone was against him, including his relatives. He was highly agitated and seemed relatively unaware of his surroundings. As the patient became calmer he was found to be well oriented and to have good preservation of the intellectual resources. He stated that he had no interest whatever in women or girls but that he was homosexual and felt the periodic need for sexual relations with men. He told of having made a previous suicide attempt when he became depressed over his situation. He stated further that he got along quite well so long as he engaged in homosexual acts and that he customarily had one homosexual lover after another. During these times he was well adjusted and got along without mental difficulty. After a time, however, his mother would talk to him and try to direct him away from homosexuality or he would develop the desire to become heterosexual and would abstain from homosexual acts. At such times he found that he became nervous, emotionally depressed and rather rapidly developed ideas that people were pointing at him, looking at him, and referring to him as homosexual. He would then begin to hear voices talking about him, calling him homosexual and would rapidly lose his contact with reality so that he would believe these voices were coming from the people who seemed to be referring to him.

The patient was sent to Camarillo (California) State Hospital, November 2, 1940. He was given a course of insulin shock therapy and within approximately 3 months had improved markedly and was making an excellent adjustment in the hospital. As soon as he had developed insight into his mental disorder he told his physician that he again was having strong homosexual desires and had struck up a relationship with another patient in the hospital. In order to prevent homosexual acts from taking place in the hospital, the physician transferred him to another ward where he could be under closer supervision and away from the patient for whom he had formed this attachment.



Within a few days it was noted that the patient had again become depressed and rather rapidly developed persecutory delusions and auditory hallucinations. He became acutely disturbed and a course of electroshock treatment was given in order to reduce his excitement, the therapeutic plan being to follow this with another course of insulin shock treatment. After 10 electroshock treatments, given over a period of approximately one month, the patient again had a remission and at the request of his family was given outside parole to his home. The diagnostic impression was schizophrenia paranoid type.

During the intervening 4 years up to the present time the examiner has seen the patient several times. The patient has come to the conclusion that he must live a homosexual life in order to maintain his mental health. He therefore is maintaining homosexual relationships; however he is careful not to get into difficulties with the law and limits his homosexual activities to one person for whom he forms a strong emotional attachment. This patient has been able to maintain his mental equilibrium for a period of 4 years, during which his homosexual trend has not been frustrated.

*CASE 4.—Woman of 30 years frustrated in love by "public opinion." Sudden delusions of reference and complete paranoid system. Insulin treatment unsuccessful. Complete recovery by return to husband.*

Mrs. J. S., aged 30 years, was brought to one of us April 30, 1940 by her husband because she was relating radio programs and magazine articles to herself. Her past medical history was entirely negative except for removal of a small polyp from the cervix. She had had a "weak back" all her life for which reason she had been excused from gymnastics at school.

Her husband was a business executive who did considerable traveling. They had had a home in Summit, N. J., where they had lived happily, though childless. The husband had been transferred to Los Angeles 2 years before on short notice and the transition had been difficult for the patient.

With the husband absent from home much of the time the patient had sought diversion in club work, particularly at beach clubs. She had also given more thought than usual to her physical condition and had taken regular osteopathic treatments twice weekly. She related, after recovery, that she had always been secretly disappointed in her husband's physical build; she had visualized a large dark man with broad shoulders and erect figure. The husband she married was actually shorter of stature than herself; she had accepted him because he had a successful business position and could provide a good home for her immediately. But she had almost unconsciously looked about for the type of man she always admired. She thought she might find him at beaches.

Some months before the illness to be described she went with a woman friend to the beach one day and was introduced to a swimming teacher who gave lessons in a private club. The patient at once

joined the club and arranged for lessons. The teacher was definitely her physical ideal but she tried to be nonchalant. Her woman friend suggested that they take lessons together, but the patient suddenly decided not to take lessons. She later went back and arranged to take them in the evening when no other pupils were present. She now had an extremely happy series of weeks. She was so clearly happy that her friends inquired about it and remarked how well she looked. She, however, could not refrain from sharing her happiness and took a new friend down to the beach and introduced her to the teacher. The new friend wanted to take lessons at the same time as the patient but the patient flared up and accused her of trying to interfere.

A few days later, as the patient and the new friend were lying on the beach, the friend asked her whether she did not consider it indiscreet to be alone with the swimming teacher in the evening. As days passed other friends teased her good naturedly about having a man teacher. She now became self-conscious and avoided the teacher on the beach. She began to make derisive remarks about women who wanted a male instructor.

A few more days elapsed until a sudden crisis developed on the beach. One of her friends said jokingly, "If you ask me, she is in love with the teacher." The patient became sullen, could not even think of a reply, but sat and stared at the sand. The party gradually broke up because of the awkwardness of the situation and the patient was left alone. After a time her friends rejoined her and no further reference was made to the incident. Two days later a magazine salesman circulated among the idlers on the sand and held out to the patient a copy of the magazine *Mercury*. She took it and asked the salesman whether it was for her. She looked through it and immediately found a number of articles which referred to her. One was about a prominent young swimmer which she interpreted as referring to her in disguised language. She pointed out to her friends that it seemed as though everybody knew about her. She began to look about to see whether she was being watched and "discovered" that people looked at her in a special way.

After that day she kept away from the beach until her husband returned from his business trip. She then immediately returned to the beach with him and displayed him prominently wherever she went. She heard a woman say in a fragment of conversation, "A pearl of rare beauty." She called the attention of her husband to the remark and said it referred to her for coming with her husband. She also told him that everybody there knew her but disliked her and that she was uncomfortable because of the attention she was attracting. She bought a copy of the most recent *Mercury*, and found a series of articles which she considered to be about her in veiled language. She became almost panicky over an article about a triangle affair. She saw an advertisement about goods at so much a yard and decided it referred to Yardley's of London where she had visited. She read so much

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between the lines, as her husband said, that he suspected she was losing her mind. He decided to call a taxi and return to town. As they waited for one a woman was heard to remark, "I've been a trial." The patient cut in on the conversation with the reply that she had "never been a trial to her husband." Finally two taxis came at the same time, one a Yellow, the other a Checker. The husband selected the Checker but the patient objected because she "did not have a checkered life" and resented the "implication." The husband then called the Yellow taxi but the patient remonstrated that he "didn't need to suggest that she had a yellow streak." It was at this point that the husband consulted one of us.

After physical and psychiatric examinations it was decided to give the patient a course of insulin shock treatments. An important symptom of schizophrenia was absent, namely that the patient's skin was not pasty or muddy, but entirely clear. Yet the other symptoms were so clearly schizophrenic that the patient was sent to a sanitarium and the treatment given for 2 months. The delusions continued throughout the 50 shocks and the patient did not recover. She gained 22 pounds in weight, which she did not need as she weighed 130 pounds at the beginning.

The husband then suggested that he take her with him on an extended business trip. He said she had been alone too much and that he would devote himself to her exclusively and spend every night with her. He would make the necessary social sacrifices in his business. To our surprise he reported by mail a steady improvement and she returned in 3 months entirely well.

She gained complete insight and joked about her "funny ideas." She even put the correct interpretation on the mental disturbance and said that a woman should be satisfied with her choice and not try to change her whole life if she had as good a husband as she had. She told us confidentially that the disappointment at the time was hard to bear but that it was the thing to do. She has remained well for 4 years.

**CASE 5.**—*Schizophrenic syndrome apparently precipitated by brooding over wife's death. General symptoms of schizophrenia with marked paranoid symptomatology. Poor prognosis due to chronicity and inability to relieve the "frustration situation."*

The patient, G. N., a 50-year-old white man, was admitted to the psychopathic division of the Los Angeles County General Hospital May 4, 1945, on a petition filed by a neighbor. It was stated that about 5 years previously the patient's wife, who was alleged to have been mentally ill, committed suicide and that the patient had lived alone since that time. He had brooded considerably as he had been very much devoted to his wife. His neighbors had noticed that for the past 2 years he had seemed abnormal in his ideas.

It was stated that he had delusions that passing trains made special noises to annoy him, and that he thought that all the neighbors had formed a clique with the purpose of creating noises to dis-

turb him, also that they had installed amplifiers to accentuate the noises of nature, such as those of crickets and other insects. It was further stated he imagined that his telephone was ringing although it was not, and that when he found no one was on the line he accused his neighbors' wives of ringing his number and then hanging up the telephone receiver to annoy him. Two friends had noticed his peculiarities and one had extracted a promise from him that should he ever contemplate violence he would not do anything without first informing her. Recently he had called this lady and said, "I have stood this as long as I can, I have two requests to make of you. I am going to do away with those persons who are annoying me, and I want you to testify that I was driven to do it, and inform my mother in France." Another friend had talked him into giving her his gun fearing he might commit an act of violence.

**Family history:** The patient's mother and siblings lived in France, but other information concerning them could not be obtained.

**Personal history:** The patient was widowed, had no children, was a college graduate, had no religious preference. He had served in the French Army from 1915 to 1919. For a number of years he had been professor of French at a western college.

On mental examination the patient substantiated some of the statements that had been made by the neighbors but said they were grossly misinterpreted. He attributed the actions of the neighbors to their belief that he had brooded over the death of his wife. He stated that they might have some mistaken notions that his health would be improved if he moved from the neighborhood. He denied making threats, and said he would not do anyone any harm. He added, however, that a neighbor had had his house wired and tapped. He stated further that the neighbors annoyed and bothered him and that they had the telephone ringing continually. He believed these persecutions were due to "mixed motives," and that the neighbors regarded some of his gestures as antireligious.

During his stay in the hospital he remained quiet and cooperative but was a little restless at times. He spoke freely, under a mild degree of pressure of speech, but quite relevantly. Abnormal mental content consisted of the delusions as noted previously, auditory hallucinations, and ideas of reference. There were no abnormalities of affect and the intellectual resources were intact throughout. There was no apparent insight but judgment was fair.

Physical examination and laboratory examinations were without abnormal findings.

The diagnostic impression was schizophrenia, paranoid type.

Because of legal difficulties it was not possible to follow this case longer. The schizophrenic syndrome, apparently precipitated by his brooding over his wife's death, remained chronic in this patient over a period of 2 years. It is to be noted that he was 48 years of age at the onset of this illness. The prognosis was considered poor, both because

of the chronic nature of the mental disorder and our inability to remove the frustration.

### DISCUSSION

There may be some difference of opinion among psychiatrists as to whether these are all cases of schizophrenia. The authors have based their selection of cases on the assumption that if they were left untreated they would become cases of schizophrenia; and by that criterion they actually were cases of that disease though not fully developed. Our thesis is that in certain selected cases development of a major psychotic state can be aborted by simple psychotherapy.

In case 1 the patient had well-developed delusions of reference largely because she was frustrated in her love life with her husband. When this frustration was overcome by a romantic honeymoon the patient recovered.

In case 2, because of the absence of her husband in the service and long continued frustration the patient developed feelings of alienation. On rest and psychotherapy she made a rapid recovery.

In case 3 a homosexual man was three times committed to a state hospital when frustrated. When allowed to pursue his own course he remained well.

In case 4, a woman frustrated in her love life and then in the selection of a new mate developed a typical schizophrenic syndrome with systematized paranoid delusions, failed to improve on insulin shock treatments but made a complete recovery when a better love life with her husband was established.

In case 5, the patient whose home was permanently broken by the death of his wife failed to make a recovery because no adjustment could be made in his frustration and apparently because of a long course of schizophrenic illness which had become chronic. The authors have purposely selected case 5 as a failure because of the obvious fact that not all frustration can be relieved.

### BEHAVIOR IN FRUSTRATION

The behavior of a frustrated animal or human being is a matter of common obser-

vation and the following outline is intended only as a systematization with the exception of a new contribution as shown by the material above.

1. Anxiety. This state results when a person, once frustrated, cannot accept defeat but continues to agitate and strive in a disorganized manner for the unattainable goal. The long-continued suspense and uncertainty with continuous fear of failure mingled with hope of success inevitably lead to a series of vegetative symptoms with anxiety and emotional depression. Chronic invalidism is the ultimate result.

2. Emotional depression. This state results when frustration is accepted as final, yet the desire for the unattainable goal continues without active pursuit of it. While the depression lasts the patient accuses himself of the failure, analyzes himself for defects, reviews the past but sees no hope and cannot react with further effort.

3. Reaction. When the depression (retreat) comes to an end (minutes, hours, weeks, or years after the frustration) various forms of reaction may appear, depending on the make-up and mental and emotional capacity of the individual.

A. Attack on the object or situation. The attack may consist only of vituperative language or in violence directed toward the object causing the frustration or toward any available object. This is seen in the lower intellectual levels of man and in the anthropoid apes. A chimpanzee may shake his bars, beat the ground, tear his hair, etc. Many persons will go through the same pattern by throwing dishes, stamping the floor, or otherwise displaying "temper."

If the cause of the frustration is itself available it may be attacked. In any case the fear is replaced by anger as the assailant advances to the attack. Xerxes had the sea whipped for destroying his ships.

The attack may be subtle, well camouflaged with intrigue or may be pursued by other devious methods. We then have the equivalent of war. This may lead to victory, or to a second frustration and another sequence.

B. Sublimation. A relatively small num-

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ber of persons will accept the defeat and sublimate their ambitions. One such method is intellectualization with snobbishness and pursuit of scientific endeavors.

C. Psychotic reaction. A relatively small number (and this is our thesis) will develop a psychotic reaction. The clinical picture resembles schizophrenia and can be traced from the earliest prepsychotic state through to the most advanced form. If the frustration is overcome by direct assault or by sublimation before it becomes thoroughly established complete recovery can be achieved. If success is impossible a genuine schizophrenia may develop. Prison psychosis may be a frustration reaction.

#### CONCLUSIONS

1. While there are many well-known frustration reactions which the authors fully accept as already demonstrated, a schizophrenic reaction may also be a result of frustration.

2. In schizophrenic frustration reactions, recovery from the syndrome may be obtained simply and quickly by helping the patient to overcome the obstacle or by aiding in sublimation.

3. If neither of these courses is possible a chronic deteriorating schizophrenia may result from frustration.

4. Not all schizophrenic syndromes are necessarily the disease schizophrenia.

# CEREBROSPINAL FLUID STUDIES IN ADVANCED DEMENTIA PRÆCOX<sup>1</sup>

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AND

GEORGIA LEE ALLISON JOHNSON, B. A., M. T. (A. S. C. P.)

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The question of the etiology of dementia præcox has occupied many of the best minds in psychiatry for many years; but there is as yet nothing even approaching a generally accepted theory as to the cause of this disease.

The present study was prompted by an article by Lowenstein<sup>2</sup> in which data are presented tending to link tuberculosis with dementia præcox. There, it is stated that Wagner-Jauregg emphasized . . . "his impression that a chronic mild sepsis with tuberculosis or other micro-organisms must be the basic disease." A parallel is drawn between our present-day knowledge of dementia præcox, in relation to etiology, and that of tabes and paresis before Schaudinn demonstrated the *spirochæta pallidum* as the causative organism.

Lowenstein's work is a documentation and experimental confirmation of the theory of the French school, chiefly, of tuberculosis of the brain as the cause of dementia præcox. Reference is made to the high incidence of tuberculosis in dementia præcox, and a statistically significant difference is shown in long-hospitalized cases of dementia præcox and other chronic mental disorders. The methods employed included staining of the centrifugate, culture, and animal inoculation. According to Lowenstein, a relatively high percentage of cases of dementia præcox showed cerebrospinal fluids positive, in one or more of these methods, for tuberculosis. The conclusion drawn is that there is an etiological relationship.

The writer has always been impressed by the organic aspects of dementia præcox. He was therefore initially very enthusiastic about this report and determined thereupon to investigate the results.

<sup>1</sup> From the Alabama State Hospital, Tuscaloosa, Ala.

<sup>2</sup> Lowenstein, Ernst. "Tubercle bacilli in the spinal fluid of dementia præcox." J. Nerv. and Ment. Dis., Vol. 101, No. 6, June 1945.

## SELECTION OF SUBJECTS

On the theory that schizophrenia might be the result of tuberculosis of the brain, it was concluded that very advanced or deteriorated cases should be the ones most likely to exhibit tubercle bacilli in their cerebrospinal fluids. Consequently such cases were selected. Twenty male and 20 female subjects were investigated. They were considered the most deteriorated of the schizophrenics of the 4000 patients in the hospital. The average age of the group was about 37 years, 36½ for the females, and 38½ for the males. The age range for the females was 26 to 58 years; for the males, 26 to 54 years. The duration of the disorder could be only approximated, but this was done as carefully as possible, from the data in the case histories. The average duration in the female group was 112½ months, the shortest being 37 months and the longest 232 months. The average duration in the male group was 181¼ months, the shortest being 108 months and the longest 306 months.

## SCREENING FOR SYSTEMIC TUBERCULOSIS

Considerable care was taken to be sure that none of the subjects had systemic tuberculosis. A survey, including roentgenograms of chests, was done on the whole group and no active tuberculosis was found. It was hoped that this procedure would reduce any possible source of error.

## LUMBAR PUNCTURE TECHNIQUE

There was nothing remarkable about this phase of the work. The punctures were done with the subjects in the sitting position. Somewhat more than the usual care was taken in cleansing the skin at the site of the puncture. All needles, glassware, and specimen tubes were previously autoclaved.



Tubes were plugged with flamed cotton pledgets, and they were again flamed when the test material was removed from the tubes. Five cubic centimeters of cerebrospinal fluid were withdrawn from each patient.

#### BACTERIOLOGICAL TECHNIQUE

As soon as specimens were collected, they were taken to the laboratory where they were centrifuged for 30 minutes. The supernatant fluid was then poured off and from the centrifugate two smears were made on new glass slides; a tube of Petraghani medium was inoculated; and a guinea pig was inoculated intraperitoneally. Patients were numbered from 1 to 40, and guinea pigs were numbered correspondingly. The subjects were investigated in 4 series of 10 each. The

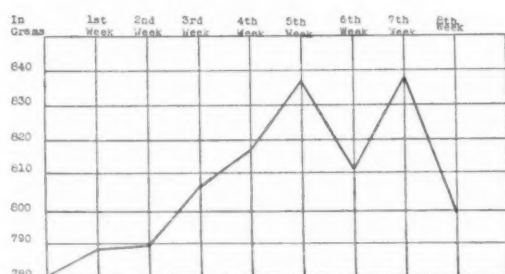


FIG. 1.—Weekly weights of the composite average.

smears were fixed by heat, and stained by the Ziehl-Nielsen staining procedure. The Petraghani medium was thoroughly exposed to the centrifugate. The inoculated guinea pigs were weighed and observed weekly for 8 weeks or more. All the smears were negative. Of the Petraghani tubes inoculated, all were negative for *M. tuberculosis* after 6 weeks of growth and at various times in the interim. The guinea pigs were weighed weekly and the weekly averages are shown as a composite graph in Fig. 1. Most of the increase may be accounted for by natural growth. However, 2 of the pigs were pregnant at the beginning and subsequently delivered 4 and 3 pigs respectively. (These 2 pigs were not included in the weight average after the birth of their young.) The guinea pigs were not too healthy to begin with. They were cared for by psychotic patients which may have accounted for some of the loss and the rather marked fluctuation in the

curve. However, it will be seen that the general trend was upward.

#### THE CONTAMINANTS

The guinea pig which gave birth to 4 young died 5 days later. She was autopsied and veal infusion broth was inoculated from her brain. This yielded a Gram negative coccus which was concluded to be a contaminant. Veal infusion broth was inoculated from the heart blood, yielding a Gram negative bacillus. Petraghani's medium was inoculated from the peritoneal fluid, which also yielded a Gram negative rod. On the culture from the heart blood was found a Gram negative motile rod. This was transferred to a nutrient agar plate, as was the growth from the peritoneal fluid, and yielded a good growth: moist, opaque, raised, confluent colonies. The same was noted in the growth from the peritoneal fluid. Material was transferred from each to E. M. B. plates, and in each instance it was noted that there was no metallic sheen and that there was usually (although not always) an abundant growth. These cultures were transferred to the various sugars, and in 24 to 48 hours it was noted that the cultures were positive for acid and gas in dextrose, lactose, maltose, saccharose, and mannitol. It was concluded that the organism was *Escherichia coli*, and that the guinea pig had probably died of bacteremia due to this organism.

The Petraghani medium inoculated from the centrifugate of the cerebrospinal fluid from subject number 7 produced a growth, within a few days, of mobile Gram negative bacilli. Some were in fairly long chains and others were in parallel groups or rafts characteristic of *M. leprae*. These organisms were cultured through numerous media and studied intensively for several months; they did not ferment any of the sugars and early began to resemble *B. abortus*. Agglutination tests were done on the subject from which this specimen was taken and on two occasions, several months apart, were negative. Later, it became spore-bearing and was discarded as a contaminant.

The centrifugate from the cerebrospinal fluid of subject number 8 produced, on

Petragnani's medium, large flat moist colonies of Gram negative bacilli. There was one spreading colony of Gram positive cocci (staphylococci). This culture was discarded as an obvious contaminant. It was to the guinea pig used in this case that 3 pigs were born.

No other cultures produced growths.

To the culture method employed in the last 10 subjects in the series was added inoculation of veal infusion broth (with 20% blood serum).<sup>3</sup> Still, none of the cultures was positive for *M. tuberculosis*, or any other bacterial growth.

<sup>3</sup> Hoyt, Anson, Holtzworth, Frances, Kuntzher, Barbara, and Fisk, Roy F. "Diagnosis of tuberculosis by culture and guinea pig inoculation." J. Lab. and Clin. Med., 25: 88-93, 1939.

#### COMMENT

This research was undertaken with an open mind. All efforts were exerted to confirm the works of investigators who have postulated *M. tuberculosis* as the etiological organism of dementia præcox. If there were any further methods of investigation, of tried value, they would have been utilized.

#### CONCLUSION

After 13 months of intensive investigation of 40 very deteriorated dementia præcox patients, the writers are unable to confirm the conclusions of numerous European and some American authors concerning the postulated etiological relation between *M. tuberculosis* and dementia præcox.

FOLLOW-UP REPORT ON A SERIES OF POSTTRAUMATIC EPILEPTICS<sup>1</sup>A. EARL WALKER,<sup>2</sup> M.D., AND FRED A. QUADFASEL,<sup>3</sup> M.D.

A year ago the studies being made at Cushing General Hospital, the posttraumatic epilepsy center of the United States Army, on patients suffering from convulsive seizures as the result of war wounds of the head were reported to this section. Practically all those cases have been discharged to their homes by this time. Through the American Red Cross we have been able to have periodic reports on the medical, social, and economic progress of these cases.

At Cushing General Hospital the patient was considered to have been controlled by drug therapy when he was free from attacks for a period of 6 months. The patient was then discharged. Of the 238 who were under observation and treatment, 110 met this arbitrary standard. Phenobarbital in doses of usually 0.1 gm. daily was sufficient to control 64 of these cases; dilantin usually 0.3 gm. daily combined with phenobarbital 0.1 gm. was required for 26 cases; and dilantin usually 0.3 gm. daily was adequate in 9 cases. It is possible that dilantin alone would have controlled many of the other cases, but the routine therapy adopted did not allow that observation. Twenty cases were controlled during 4 to 6 months' hospitalization, at the end of which time the patient was discharged or transferred to another hospital. Some 66 cases were not controlled by anticonvulsant medication. Of this number approximately 40 were operated upon and a cortical resection performed. The other 26 cases represent patients who were considered unsatisfactory for operation, mainly because of neurological defects, infected wounds, or personal prejudice. The surgical therapy consisted in the localization of the epileptic focus by activated metrazol electroencephalography and electrocorticography and its removal alone or with the scar including resection to the lateral

ventricle in some cases. Following operation the patients were prescribed phenobarbital 0.2 gm. daily, which was a much smaller amount of anticonvulsant medication than taken preoperatively.

At 3, 6, and 12-month intervals after discharge from the hospital follow-up reports were requested. We have been able to make contact with 82.1% of the entire group of patients through the local chapters of the American Red Cross. In the majority of cases the patient was interviewed and information obtained regarding his (1) employment, (2) social adjustment, (3) medication, and (4) convulsions, if any.

*Employment.*—It was very discouraging to find that, in spite of the attempts made at vocational guidance before the patient was discharged from the hospital, only 31.8% of those whose attacks were apparently controlled were working. Few of these patients were employed in positions comparable to those they held before the war.

*Social Adjustment.*—The great majority of the patients reported that they were lying around the house because working "made their heads worse," or "made them too tired." Movies, reading (usually quite limited), and listening to the radio constitute the occupation of many of these patients.

Within their own household an adequate social adjustment has been accomplished by only approximately one-half of these posttraumatic epilepsy cases. Yet some patients have been able to make very satisfactory social rehabilitations. They have returned to school and university, entered industry and business with success. One epileptic hemiplegic has invested in the growing and selling of orchids.

*Medication.*—Few patients have continued taking their medication as prescribed at the time of their discharge. Approximately 10% of the group stopped all medication. Not a few were told by their physician to decrease or eliminate the medication because they had been free from attacks for 6 months or a year. Some have had difficulties obtaining

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.

<sup>2</sup> From the Division of Neurological Surgery, University of Chicago, Chicago, Ill.

<sup>3</sup> From the Percy Jones General Hospital, Battle Creek, Mich.

the drug and, having run out of it, have had attacks before a new supply could be secured.

*Conclusions.*—In spite of the irregular anticonvulsant therapy 55.5% of the patients originally discharged as controlled for at least 4 months have been free from seizures for from 12 to 18 months (Table 1). Approximately 20% have had only one attack. This response to anticonvulsant medication is quite encouraging, indicating that about three-fourths of the patients considered con-

TABLE 1

## RESULTS OF MEDICAL THERAPY

(Approximately one year after discharge)

Patients discharged as controlled.....	130
No convulsions.....	51 (55.5%)
One convulsion.....	19
Several convulsions.....	22
Number working.....	28 (31.8%)
Patients with inadequate hospitalization.....	42
Patients not controlled medically.....	66
Total .....	238

trolled medically maintained their healthy state.

In the group of medical failures some 40 cases were subjected to surgical removal of an epileptogenic focus. The remaining 26 cases serve as a control group for the surgical treatment. Approximately one year after operation one-third of the cases treated by cortical excision have had no further attacks and another fifth have had only one attack or the aura of their attacks. In the control group only 3 patients of 20 have had one or no attacks, and there is doubt of the reliability of the report on one of the cases.

The ultimate value of the surgical treatment of posttraumatic epilepsy can only be determined after a 5- or 10-year follow-up. There seems some reason to believe, however, that cortical excisions may offer help to a certain group of patients not benefited by medical management. With greater experi-

TABLE 2

## RESULTS FROM CORTICAL EXCISIONS

(Approximately one year after operation)

	Scar resection	Scar resection to ventricle	Epileptogenic focus	Subdural membrane	Total	Control group *
No attacks.....	2	3	7	0	12	1
Aura only or 1 attack .....	1	1	4	1	7	2
More than 1 major attack .....	6	3	7	1	17	17
Total .....	9	7	18	2	36	20

\* This group consisted of patients not controlled by medical management who, because of neurological incapacity, infection, or personal prejudice, were not considered suitable for operation.

ence and more precise knowledge of cortical physiology in focal epileptic states, surgical therapy may be of even greater value.

However, the posttraumatic epileptic has more social than medical difficulties. Economic and social rehabilitation is a primary need of these patients. Only when the posttraumatic epileptic is a useful member of society can the problem of posttraumatic epilepsy be considered solved.



## GROUP PSYCHOTHERAPY AS ADJUNCT TREATMENT OF EPILEPTIC PATIENTS<sup>1</sup>

### PRELIMINARY REPORT

ALBERT L. DEUTSCH, M.D., AND JOSEPH ZIMMERMAN, M.D.

In July, 1946, the Mental Hygiene Service of the Ray Clinic at the New York Regional Office of the Veterans Administration, as part of a National Epilepsy Program(1), developed a plan for the treatment and rehabilitation of all veterans suffering from convulsive disorders(2).

As part of our program, the authors introduced the group psychotherapeutic approach as adjunct therapy in alleviating any possible disturbing emotional factors that might be precipitating seizures in the individual patient. In concurrence with the belief of many workers(3, 4, 5, 6) in this field, it was definitely felt that psychotherapeutic interviews were essential in alleviating some of the factors which produced anxiety, tension, and frustration.

It was especially noted that most of the patients had no knowledge of what comprised a convulsive disorder. In those few cases where some information of the disease was known, considerable misconceptions, superstitions, and distortions of facts prevailed. If it were possible to remove this misinformation through the group approach, there would be a lessening of the resulting fear and anxieties, and, in turn, a reduction in the frequency and severity of seizures. It was with this in mind that our group program was formulated.

### PURPOSE

The group sessions had a varied and diversified aim: First, they would serve to give correct information concerning the disease, epilepsy. Secondly, they afforded the patient an opportunity to discuss many of his emotional problems which are so frequently overlooked in the brief interviews used in large clinics. Third, the group acted as a sounding board for developing the concepts of reha-

bilitation. In addition, it acted as a means of bringing the family group into the therapeutic program and thus produced a better patient-family relationship. Finally, the group sessions aided in the development of an "epileptic esprit de corps" and thus, through mutual identification, served to eliminate the concept of the convulsive patient's being an outcast in society.

### PROCEDURE

In our preliminary studies we admitted a total of 168 patients in our program of whom 139 were assigned to group psychotherapy sessions. The remaining were excused for various reasons. The patients were divided into units of 20 and assigned to a specific group. The first half of the first 3 sessions was devoted to orientation of the patient and the problems involved. The material discussed included (1) the history and definition of epilepsy, (2) the causes of epilepsy, (3) the various types of seizures encountered, (4) the modern treatment, (5) the hereditary factors associated with the disease, and (6) the question of marriage among epileptics.

The second half hour was then devoted to a discussion with the authors as mediators of the material which had been presented. The patients were encouraged to ventilate freely and discuss anything that was not understood by them. During several of the sessions the patients voluntarily stood up in front of the group and led the question-answer period. When this occurred, it was encouraged and we found it to be a definite ego-reinforcement measure. The meeting also included a discussion of the problem of anxiety in its relationship to the precipitation of seizures. These discussions were given by members of our clinical psychological staff.<sup>2</sup>

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.

<sup>2</sup> Mr. Morris Stein and Mr. Milton Theaman.

Further sessions were taken over by representatives from the Vocational Rehabilitation Section who advised the group as to the various occupational skills and aptitudes which were necessary to be considered in future employment fields. They were also advised on how they were to obtain training or employment in spite of their disability. Following these sessions, open discussions were held with the veteran in the group to iron out the employment problems encountered. Further meetings were held with representative members of the patient's family so that they also could receive orientation as to the nature of the problems involved and how they could cooperate in relieving the anxieties and tensions resulting from family over-concern. Members of industry and various employment agencies were invited to our groups to discuss employability of the epileptic and attitude of the employer toward the disease.

In addition, audio-visual aids were used in the form of motion pictures and reproductions of radio broadcasts.<sup>3</sup> Following these demonstrations, the patients were stimulated to discuss freely the relationship of their own problems to the presented material.

Bibliography in the form of material issued through the courtesy of The National Association for the Control of Epilepsy, such as "The Ghost Is Out of the Closet" and "The Green Light," were given to the patients for reading.

#### MATERIAL

The patients were referred to the epilepsy program from all departments of the New York Regional Office, including the Vocational Rehabilitation and Social Service Sections, and also from various social and government agencies outside the Veterans Administration. The program was correlated with all activities of the various departments so that the patient would be able to receive immediate intensive medical, psychological, and social service attention before he was admitted to the group psychotherapy sessions.

The patients were veterans of World War I and World War II, the greater majority being of the latter group. The duration of

their illness ranged from 6 months to 26 years. The age group varied from 20 to 50 years of age. There were 136 males and 3 females in our program. The educational level varied from that of the primary grades of grammar school to that of the university level. There were a few patients with language handicaps. No restriction on admission to the program was made other than that their illness be service-connected and that they be desirous of treatment.

Under Chart 1 we have listed the various etiological factors encountered. Roughly,

CHART 1

Primary.....	Genetic or of unknown origin	83
Secondary.....	Due to	
	Shell fragment wound or gun shot wound with skull fracture.....	42
	Following postconcussion syndrome....	6
	Following operation for subdural hematoma .....	4
	Neoplasm (frontal meningioma and occipital dermoid cysts).....	2
	Porencephalic cyst .....	1
	Malaria .....	1
Total .....		139

59% (83 cases) were found to be of genetic or unknown origin and 40% (46 cases) were secondary, due to various known causative factors. The types of seizures also varied, representing a cross of the major groups with its multiplicity of combinations (see Chart 2).

CHART 2

#### TYPES OF SEIZURES

Grand mal . . . . .	76
Petit mal . . . . .	11
Psychomotor . . . . .	2
Jacksonian . . . . .	28
Mixed . . . . .	22
Total . . . . .	139

#### DISCUSSION

In general, we found that the patients were very responsive and receptive to the sessions and the discussions mentioned above. They participated well and entered into the conversations freely. In every case they expressed the feeling that they had gotten something from these groups. They were able to view their problems more objectively.

<sup>3</sup> Dr. Jerry Price's recordings over WMCA.

They had less fear, anxiety, and insecurity concerning their disorder. They no longer felt that they were freaks and curiosities to be observed with disdain by their family and friends. They appreciated the fact that they were no longer alone with their condition and that there were others similarly afflicted. They were more reassured as to the possibilities of education and training, and they could work not only within the limits of their illness but in spite of it. In addition, many of their anxieties and superstitions concerning their disease were revealed and they were able to adopt a sounder and healthier attitude.

As the family was brought into the discussion, the patients noted that they were less anxious and tense, and their sense of well-being improved. Many of the patients' anxieties and concern in relation to the family and his illness which had been exaggerated and amplified by the over-concern of the family were now reduced.

Various social and governmental agencies plus industrial firms which had been approached evidenced a willingness to cooperate with the group, and many of the employers who had no concept as to the employability of the epileptic were now willing to work with the handicapped group.

#### SUMMARY

In our studies it was found that group psychotherapy is of definite value as an adjunct treatment of convulsive disorders in that

1. It attempted to eradicate the patient's fears concerning the disease.

2. It eliminated superstitions and misconceptions.

3. It gave the patient an opportunity to ventilate freely his fears and anxieties concerning the illness.

4. It was useful in discussing the availability of vocational rehabilitation, advisement and guidance, and training.

5. It served as a means of improving the patient-family relationship.

6. It produced "esprit de corps" and thus helped to eliminate the patients' feeling of being a social outcast.

7. It established a means of handling large groups of patients simultaneously on a therapeutic level.

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# THE PREDICTION OF HUNTINGTON'S CHOREA<sup>1</sup>

## AN ELECTROENCEPHALOGRAPHIC AND GENETIC STUDY

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In 1872 Huntington published his classical paper(17) on the heredo-familial disease associated with purposeless involuntary movement and progressive mental deterioration. Although this disease has been appropriately named Huntington's chorea after Huntington, Waters in 1841, Gorman in 1846 and Lyon in 1863 made initial observations on two groups of families that were connected with the original East Hampton group on which Huntington subsequently published his data(20). In 1915 Davenport and Muncey(5) gathered data from Long Island, Massachusetts and coastal regions of America on 962 cases in which Huntington's chorea and diseases associated with tremors had occurred at some time or other. These investigators traced the genealogy of these cases to half a dozen persons including 3 afflicted brothers who emigrated to America in the 17th century. A fairly large amount of genetic, clinical and neuropathological material(2, 5, 8, 15, 16, 19, 25, 31, 38, 40, 42) on the disease has accumulated since Huntington's publication but a direct neurophysiological approach to the understanding of the disease is infrequent. In recent years the neurophysiological or ablation study of animals has brought much knowledge of the extrapyramidal system(3, 4, 9, 10, 21, 22, 23, 24, 29, 30) and thrown indirect light on the neural mechanism of choreiform movements in Huntington's chorea in which that system is primarily involved. And yet very little is known about the neurophysiological basis of mental deterioration which is usually found in this disease.

A neurophysiological study of patients

afflicted with Huntington's chorea through the use of the electroencephalographic technique would then be a pertinent one, especially because of the added fact that there is growing evidence that the electrical activity of the cerebral cortex, which an electroencephalograph records, is in some measure influenced or modulated by that of lower level structures like thalamus, basal ganglia, etc.(4, 7, 9, 10, 24, 32, 34, 35, 39, 43)—and some of these structures happen to be particularly involved in Huntington's chorea. There are two preliminary electroencephalographic reports on this disease, one by Gibbs and Gibbs(13) based on one case and another by Yeager and Baldes(46) based also on one case. The third electroencephalographic study by Foster and Bagchi(12) is based on 13 cases examined neurologically, genetically and psychometrically. These cases showed a large proportion of electroencephalographic abnormality of certain types. Lennox, Gibbs and Gibbs(26), Lowenbach(27) and others(37, 41) have shown that the relatives of patients suffering from epilepsy, another central nervous system syndrome, exhibit a significantly greater proportion of abnormal EEGs than is found in a control group. On the basis of these two sets of observations it would be natural to inquire: (1) Do the offspring of patients afflicted with Huntington's chorea show electroencephalographic abnormality as do the blood relatives of epileptics? (2) If they do, is there any inter-family or intra-family electroencephalographic resemblance? (3) To what extent, if any, can such electroencephalographic abnormality be made the basis of prediction of the development of the disease in the symptom-free offspring having that electroencephalographic abnormality? (4) Are there other findings than the electroencephalographic ones, like physical, neurological, genetic, anthropometric, psychiatric or psychometric, relative to different aspects of the organism that may support or

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.

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invalidate the electroencephalographic basis of prediction? Although electroencephalography is competent to pick up inherent pathological conditions in the central nervous system, there has been no electroencephalographic study of the asymptomatic offspring of the afflicted persons. The purpose of this study is to make a preliminary investigation of the above-mentioned problems and to look for supplementary aid in the matter of prediction from physical, neurological, psychological, genetic and anthropometric data.

#### MATERIAL

The single criterion for the selection of subjects was that each have a parent who had been diagnosed without question as having Huntington's chorea. Whenever possible the afflicted and normal parents were both examined. The number of parents available was limited by death or distance of one or the other thus curtailing one phase of the investigation that was considered most desirable. The ages of the offspring examined ranged from 6 to 41, there being 6 in the first decade, 12 in the second, 5 in the third, 1 in the fourth and 2 in the fifth, making a total of 26. Among the 9 families studied were two sibling groups of 6 children each.

#### METHOD

The examinations carried out upon each subject included the following: physical, neurological, psychiatric, electroencephalographic, psychometric and anthropometric.

#### PHYSICAL FINDINGS

The physical findings included a variety of abnormalities such as one might find in any group of individuals coming largely from a lower social stratum. Three individuals suffered from strabismus, one a congenital absence of the upper lateral incisors and 2 of one sibling group of 4 suffered from ichthyosis. One subject presented a striking facial asymmetry.

#### NEUROLOGICAL FINDINGS

Four subjects presented nystagmoid movements on lateral gaze, but since this is not a finding typical of Huntington's chorea, it was

not considered significant. The digital reflex was mildly positive in one or the other hand of 4 subjects and definitely positive in a fifth. Although a strong digital reflex is characteristic of many patients having Huntington's chorea a weak response to this test is so prominent in the general population as to make the findings of no significance. Three individuals (26I-V-1, 5, 6)<sup>2</sup> of one sibling group presented slight but detectable adiadokokinesis and another (26I-V-2) of this same sibling group was noticeably clumsy. Thus, though there were various physical and neurological abnormalities, no consistent deviation of any type was suggested.

#### PSYCHIATRIC FINDINGS

As a disproportionately large percentage of the group had suffered from broken homes, insecurity and repeated displacement, disturbances in emotional maturity and in adjustment were to be expected and were found to be frequent. These disturbances were of the type common to "displaced children" and contributed nothing to the problem at hand.

#### PSYCHOMETRIC FINDINGS

The Revised Stanford Binet was used routinely and disclosed a rather wide range of results, the I.Q. varying from 74 to 134, one-third being below 90 and one-third above 110. In general, sibling groups were rather consistent in the results which they achieved indicating that these individuals followed in general the family pattern.

#### GENETICS OF HUNTINGTON'S CHOREA

Study of the heredity of certain factors in the families concerned herein does not yield much if any information toward early diagnosis of the disorder. The factors studied were certain anthropometric measurements, standard test factors used as chromosome markers, and a careful examination and verification of the pedigree of each family.

The anthropometric measurements were the following: weight, stature, maximum span, biacromial, biliac, chest breadth, chest

<sup>2</sup> For explanation of symbols see note in Table 2.

depth, sitting height, head length, head breadth, bigonial, total face height, skin color, hair color, eye color, hand grip. These measurements failed to yield any significant correlation with the defect.

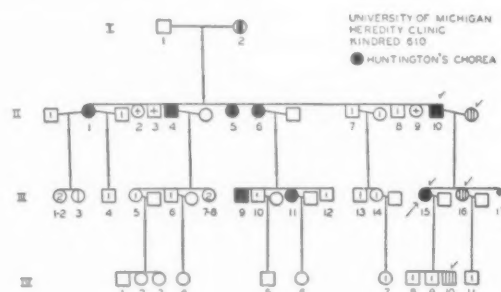
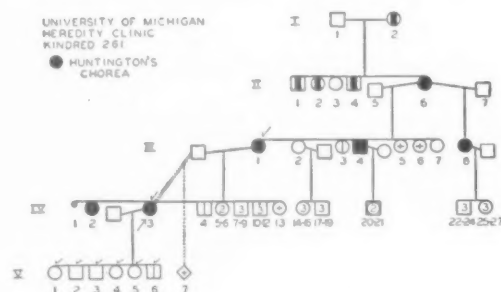
The test factors studied are those routinely used in the heredity clinic of the University of Michigan as chromosome markers, and to verify the relationships indicated. They include blood grouping (for A, B and O factors), blood typing (for M and N factors), Rh factor typing in some instances, the secretor test (determination of the presence or absence in tissues other than blood of the blood group proteins), the taste test (to determine whether or not a person has the ability to taste the substance pheno-thiocarbamide, an inherited ability), a color vision test (either Farnsworth's 100-hue test or Ishihara's), handedness, and eyedness. An analysis of the inheritance of these factors with the Huntington's chorea defect in the families of this study shows for the most part no correlation. The one exception is found in the blood groups. Among the 32 affected persons (not all were members of the 9 families forming the basis for this study) whose bloods were examined, 19 were of blood Group A (59.3%), 12 were of Group O (37.5%), one was of Group B (3.1%). In Detroit, Michigan, a study (44, p. 304) has shown that Group A occurs in 36.1% of the population, Group O in 44.5% and Group B in 14.3%. These families which we studied were all of north central European, English, or Irish stock, so it is pertinent to consider the percentages from these areas as well as in Michigan. Of the various German groups tested (*loc. cit.*, p. 300), the highest percentage of Group A found is 45.9%, with Group O at 40.5% and Group B at 10.6%. Among the English, the highest percentage of Group A (*loc. cit.*, p. 299) is 47.7%, with Group O at 43.2%, and Group B at 6.4%. Thus the frequency of Group A in our Huntington's chorea victims is considerably higher than for any of the localities from which our patients have originated. Our patients for the most part are an unrelated group. It must be admitted that this is not a large enough number of affected persons to yield conclusive evidence, but it does provide a suggestion that some connection (36) may exist between blood group and

inheritance of the defect, since there appears to be a significant correlation between the two. Of the offspring studied here, 7 were of Group A, 6 of Group O and 1 of Group B.

## EXPLANATION OF SYMBOLS

### PEDIGREE CHARTS

Kindred numbers correspond with those mentioned in the text (see footnote to table 2). Two pedigree charts, 1073 and 1075, are not shown here.

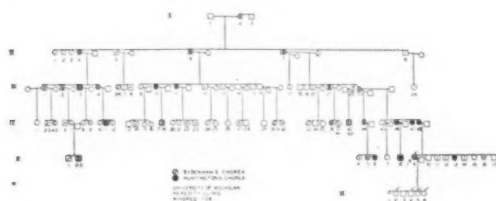
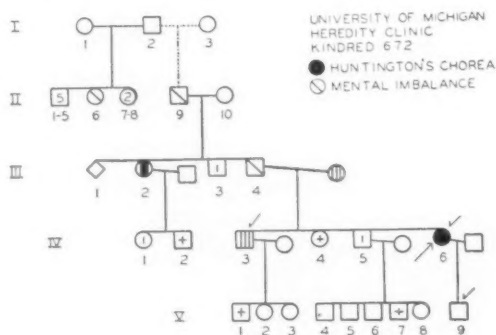
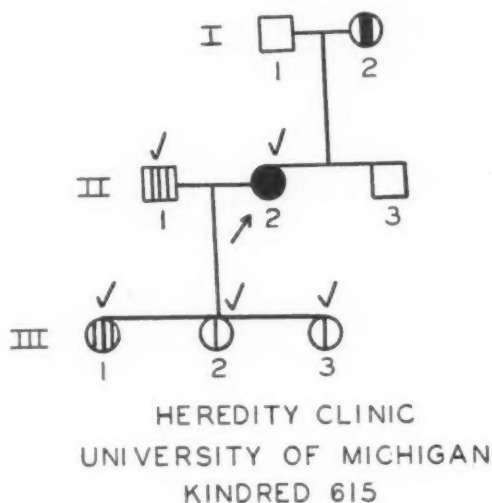


A number were lost by lysis leaving too few to draw any conclusions. At the present time it has not been possible to obtain blood from other victims of Huntington's chorea, but it is hoped this aspect of the study may be carried on further at a later date.

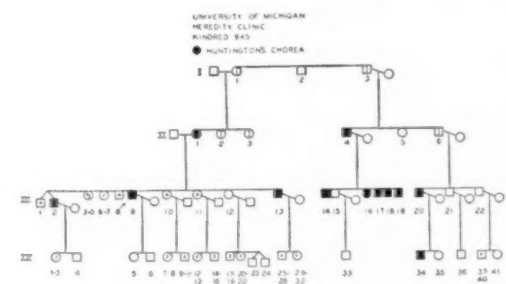
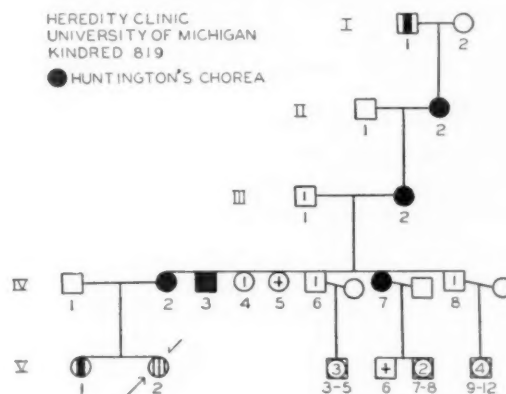
In this study, 9 families were investigated extensively from the genetic approach. In

addition, bloods and other test factors were studied from 18 other unrelated individuals. The pedigrees obtained from the 9 families were carefully verified and extended by

### ● HUNTINGTON'S CHOREA



All but one pedigree (672) showed obvious and conclusive evidence of dominant inheritance of a fully penetrant and stable defect, as has been found in the past(2). The only pedigree (672) which does not show such obvious dominant inheritance leaves room for question. This pedigree differs from the usual dominant pattern, in that II-9 and III-4, both in the direct line of inheritance of the defect, were never diagnosed or suspected to be victims of chorea. Both, however, had periods of severe mental



imbalance, and were confined in institutions more than once because of such mental disturbance. It is possible that these persons died either before onset of recognizable symptoms of chorea, or that in them the disease did not manifest the usual symptoms noted in other afflicted members of the family.

The pedigrees of the 8 families were analyzed to determine whether any differences were present in the sex ratio of affected persons. By Fisher's method(11), used to avoid bias in favor of the sex of the proband and lineal ancestors, no sex deviation from 1:1 was found, nor was there any

several lines of investigation. As many members as possible of each family were brought to our hospital for medical examination. Additional sources such as records from state hospitals, courts and social workers were utilized.

deviation from 1:1 among the offspring of affected persons.

It is notable that other marked abnormalities of certain types are frequent in most of these families. Alcoholism is common in: 261-I-1, II-5, III-4; 756-III-18, -9, IV-29. Sex offenders occur in two families in unusual frequency: 261-III-1 and spouse, -4, -5, -7; IV-2, -3; 756-IV-20, IV-3. Feeble-mindedness is frequent in one: 261-I-2, II-1, -2, -3, -4, -5, III-1, -2, -5, -7. Enuresis is a common complaint in at least one family: 261-III-1, -5; IV-2, -3, -4. Incest occurred at least once: 261-IV-3 and her father. Sydenham's chorea was found in one: 956-IV-33, V-1.

It is possible that further study of blood groups among Huntington's chorea patients may bear out a positive correlation of the defect with the blood group, indicating some

poral regions monopolarly and from fronto-motor, motor-occipital, occipito-temporal and bi-temporal regions bipolarly for from 45 minutes to 1 hour. This included a 2-minute period of hyperventilation (30 to 35 of rather deep inspirations and expirations per minute). Two subjects' records were repeated within about a year without any noticeable change. A representative sample of 1 meter of record of motor and occipital regions free from artifacts due to movement, drowsiness or other physiological conditions, was chosen for the analysis of the wave frequencies, the proportion of their incidence and amplitude and frequency modulation. The whole record was surveyed for special signs including high voltage bursts or abortive spike-and-wave formations. The potentials of motor regions were classified into normal, borderline and abnormal according to criteria men-

TABLE 1  
TYPES OF ELECTROENCEPHALOGRAPH OF OFFSPRING OF PATIENTS AFFLICTED WITH  
HUNTINGTON'S CHOREA

EEG	1st decade	2d decade	3d decade	4th decade	5th decade	Total	%
Normal .....	1	1				2	7.7
Borderline .....	1	1	2		1	5	19.2
Abnormal .....	4	10	3	1	1	19	73.1
	6	12	5	1	2	26	100.0

sort of connection between blood group and inheritance of the chorea defect, but we were unable at this time to study enough victims to provide conclusive information, and we are, as yet, without any clue as to what the correlation may be. Present indications are that the excess of Group A is too high to be based on a locality distributional peculiarity. Other than this we have not been able to find any linkage, or other indication whereby the study of these choreic families by the methods used by the staff of the heredity clinic as outlined above will aid in early identification or prediction of the disease in the offspring of choreic victims.

#### ELECTROENCEPHALOGRAPHIC PROCEDURE AND FINDINGS

The brain potentials of subjects were recorded by means of a 3-channel Grass electroencephalograph, sometimes a 6-channel one, from frontal, motor, occipital and tem-

tioned elsewhere(1) and compared with those of the occipital regions. The motor regions were approximately similar to the frontal regions in their characteristics except that artifacts were less frequent. The selection of the motor region for evaluation instead of the occipital is governed by two considerations: (1) probable greater significance of motor regions in view of the involvement of the extrapyramidal-pyramidal system of the parent afflicted with Huntington's chorea and (2) observed striking changes in those regions in the offspring.

Nineteen of the offspring (73.1%) were electroencephalographically abnormal, 5 (19.2%) borderline and 2 (7.7%) normal as shown in Table 1. The borderline and normal cases were 261-V-6, 756-VI-5, 756-VI-2, 819-V-2, 1075-IV-4, 1073-III-2, 1073-III-4. The extent and character of the abnormalities are described in detail in Table 2. Many of the offspring showed striking



TABLE 2

CLASSIFICATION OF SOME OF THE CHIEF ABNORMAL ELECTROENCEPHALOGRAPHIC  
CHARACTERISTICS OF THE OFFSPRING OF HUNTINGTON'S CHOREA CASES,  
HAVING AN ABNORMAL EEG RECORD

		Total
<b>A. Resting record</b>		
Moderately slow serials, 6-8 p.s. (+,+,+,+)		
With high voltage slow episodic bursts (++,+++).	1073-III-1 (17), 261-V-2 (13-11), 756-VI-4 (22)	3
Without high voltage slow episodic bursts.....	261-V-1 (15), 261-V-4 (10-6), 261-V-5 (8), 615-III-3 (6-2), 610-IV-10 (14-3)	5
Markedly slow serials, 2-5 p.s. (++)		
Without slow bursts.....	1073-III-5 (7-5)	1
With superimposed sharp fast waves.....	610-III-16 (39)	1
Markedly slow singles, 2-5 p.s. (++)		
With high vol. slow or fast bursts (++,+++)	615-III-2 (13-6) 672-IV-3 (46)	2
Without high vol. slow or fast bursts.....	1073-III-6 (7-5)	1
Moderately slow singles, 6-8 p.s. (+,++)		
With high voltage slow bursts (++).....	672-V-9 (16)	1
With medium vol. sharp fast bursts (+++)	261-V-3 (13)	1
With low vol. fast serials (+).....	1073-III-3 (13)	1
Markedly sharp med. vol. fast serials, 13-16 p.s. (+++)		
With high vol. slow bursts (++).....	615-III-1 (21)	1
Low to medium vol. fast serials (+++)		
With moderately slow singles (+).....	945-IV-6 (29)	1
Normal alpha background (+++)		
With high vol. genuine spike-and-waves lasting about a second (++).....	756-VI-6 (17)	1
		19
<b>B. Abortive spike-and-wave (++,+++):</b>		
Resting record .....	615-III-1 (+), 615-III-2, 672-IV-3, 1073-III-3, 261-V-1, 261-V-2, 756-VI-4, 756-VI-6.	
Hyperventilation record .....	261-V-2, 261-V-3, 756-VI-4, 672-V-9, 672-IV-3, 1073-III-3, 1073-III-4.	
<b>C. Marked hyperventilation effect (mod. or markedly slow serials (++,+++), and/or abortive spike-and-wave, and/or quick initiation within 15 to 60 sec.).....</b>		
	615-III-1, 615-III-2, 672-V-9, 672-IV-3, 1073-III-3, 1073-III-4, 1073-III-5, 1073-III-6, 261-V-5, 261-V-2, 261-V-3, 261-V-4, 756-VI-4, 756-VI-6, 615-III-3.	
<b>D. Mixed or poor amplitude modulation and/or frequency modulation in resting record.....</b>		
	610-III-16, 610-IV-10, 615-III-1, 615-III-2, 615-III-3, 672-V-9, 672-IV-3, 1073-III-1, 1073-III-3, 1073-III-5, 1073-III-6, 261-V-1, 261-V-2, 261-V-4, 756-VI-4, 756-VI-5, 1075-IV-4, 945-IV-6.	

\* NOTE.—For single or serial waves in representative sample of 1 meter record or in hyperventilation record: + means incidence of 10 to 25% of the time; ++, 26 to 60%; +++, 61 to 100%. For high voltage bursts or spike-and-wave in the entire resting record, or hyperventilation record: + means once; ++, 2 to 4 times; +++, 5 times or over. Low voltage = 20 microvolts, medium voltage = 21 to 50 microvolts, high voltage = 51 to 100 microvolts. Explanation of symbols, e.g., 261-V-2 (13-11): First three figures (e.g., 261) represent pedigree chart number, Roman numerals (e.g., V) filial generation number, next figures (e.g., 2) progeny number, figures within parenthesis (e.g., 13-11) age in years and months.

abnormality in resting record and/or during hyperventilation. The second decade group proved to be the most abnormal but that finding is probably accidental because of greater availability of subjects in that age group. There is no question about the abnormal brain function in children of 10 to 16, and 6 to 9, even if we allow some expected incidence of slow waves in children, especially in the younger group. The abnormality consisted mainly of (1) dominant slowing of waves, (2) sudden high voltage episodic slow or fast bursts, (3) abortive or genuine bilateral spike-and-wave formations and (4) exaggeration of the above characteristics during hyperventilation. (Figs. 1 to 4.) Also, in many cases (Table 2-D) a general disorganization of pattern was noticed because of mixture of various frequencies and amplitudes within short units of time. Besides these characteristics there were others such as high voltage diphasic spikes, positive discharges and fast components which played a part in the over-all evaluation but which are not all shown in Table 2. Subjects are placed in this table (particularly under A) in accordance with the most striking electroencephalographic abnormalities, thus ignoring lesser deviations and avoiding duplication.

It is important to note that many of the offspring exhibited electroencephalographic characteristics (spike-and-wave, etc.) that are known to be diagnostic of a convulsive disorder, yet none of them had personal or familial history of that disorder. It is also important to observe that there was no specific or uniform electroencephalographic pattern in the offspring of Huntington's chorea cases except that slowing and general disorganization in point of poor frequency and amplitude modulation were most in evidence. Only in the latter respects was there some broad (probably too broad) inter-family resemblance. From the standpoint of over-all evaluation there was little inter-family resemblance. Of course, number of cases in each family was small. For instance, in the family No. 756, two had borderline and two abnormal EEGs, in the family No. 1073, 2, showed normal and 4 abnormal EEGs, in the family No. 261, one showed borderline and five abnormal EEGs and in the family

No. 615, all 3 of them showed abnormal EEGs.

Intra-family resemblance is probably not any more than inter-family resemblance. Some sibling groups showed only minor

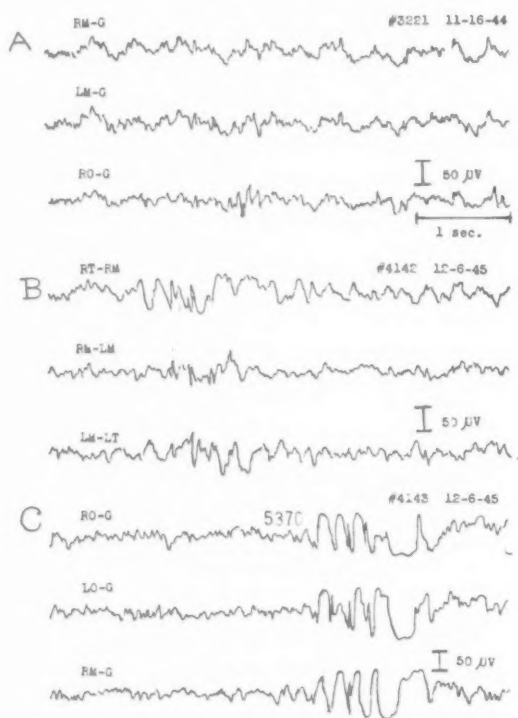


FIG. 1.—Abnormal electroencephalograms of 3 offspring of Huntington's chorea cases. See Table 2.

A. Subject, 610-III-16. Note irregular markedly slow serials (2-3 p.s.) superimposed with low voltage sharp fast waves in motor regions, less so in occipital region. RM = right motor, LM = left motor, RO = right occipital region, G = ground. Calibration of 50 microvolts and 1 sec. marked on this and succeeding figures.

B. Subject 756-VI-4. Moderately slow serials (6-7 p.s.) and also one slow high voltage episodic burst with some fast components.

C. Subject 756-VI-6. One high voltage episodic burst of spike-and-wave against the background of alpha waves and some low voltage fast activity.

similarities but no important identifiable pattern. For instance, of 6 siblings, 4 of them (261-V-5, 261-V-3, 261-V-2, and 261-V-4) showed marked hyperventilation effect between 30 and 60 seconds, a fifth (261-V-6) very minor generalized slowing and a sixth (261-V-1) abortive spike-and-waves in addition to other characteristics. Subjects

(672-IV-3 and 672-V-9) of another family showed slow bursts, slow singles and abortive spike-and-wave formations during hyperventilation but while one had a moderate proportion of alpha waves in the motor region the other had none.

There is no sex difference, 10 males and 9 females being electroencephalographically abnormal, 2 males and 3 females borderline and one male and one female normal.

Except for 610-III-16, 610-IV-10, 945-IV-6 and 615-III-1 no offspring showed any

hand, except for 615-III-1 and 945-IV-6 (low voltage fast) most of the offspring showed a mild, moderate, or a large amount of normal alphas in their occipital regions although their motor or frontal regions were usually grossly abnormal or they had shown besides high voltage generalized episodic bursts.

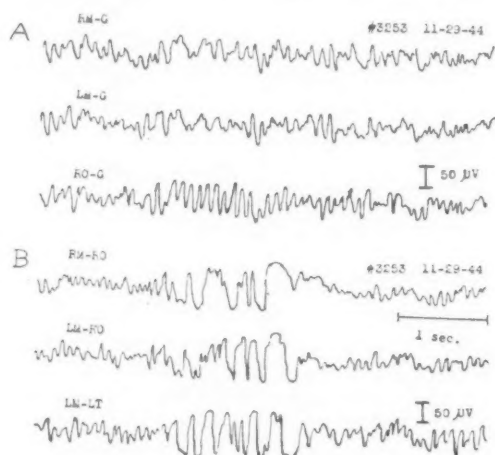


FIG. 2.—Abnormal electroencephalograms of an offspring of Huntington's chorea case. See Table 2.

A. Subject 615-III-2. Irregular high voltage normal alpha waves (10-11 p.s.) in occipital region and markedly slow single waves (3-6 p.s.) in motor regions. First two strips show poor amplitude and frequency modulation, and the third one mixed amplitude modulation but not too poor a frequency modulation.

B. Same subject. One high voltage slow episodic burst and some minor single slow waves.

definite electroencephalographic pattern that could be correlated with the electroencephalographic pattern of 8 Huntington's chorea cases studied here and 13 cases studied elsewhere (12). Even in those exceptional cases the similarities were rather spotty or remote. Most of the Huntington's chorea cases were seen to have no normal alphas in any region but did have generalized very low voltage fast waves, sometimes uncountable, or low to medium voltage poorly formed, irregular, moderately or markedly slow wave sequences without any bursts. (Fig. 5.) On the other

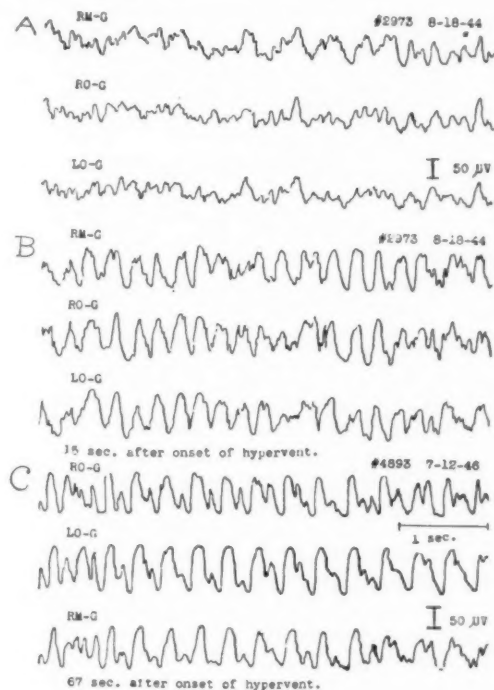


FIG. 3.—Abnormal electroencephalograms of 2 offspring of Huntington's chorea cases. See Table 2.

A. Subject 1073-III-5. Markedly slow serials (2-4 p.s.) in motor regions and mildly slow irregular serials (7-8 p.s.) in occipitals.

B. Same subject. Marked and quick hyperventilation effect in the form of high voltage rather smooth slow waves (4-4.5 p.s.). This is maintained for 2 minutes.

C. Subject 261-V-2. Paroxysmal slow waves of abortive spike-and-wave type 67 sec. after onset of hyperventilation. Marked hyperventilation effect was, however, begun some time before this.

This discrepancy between the motor regions and the occipital regions was often a noticeable characteristic in the record of the offspring. This characteristic was not commonly found in their afflicted parents available for this study or in other Huntington's chorea cases that had been examined (12).

If it is assumed that the EEG represents essentially a constitutional factor, that the improvement of the EEG with age in the second or third decade is minimal and that inherent electroencephalographic abnormality, however non-specific, serves as a background out of which may break forth the clinical manifestation with which it is genetically though not apparently associated, then the present electroencephalographic findings

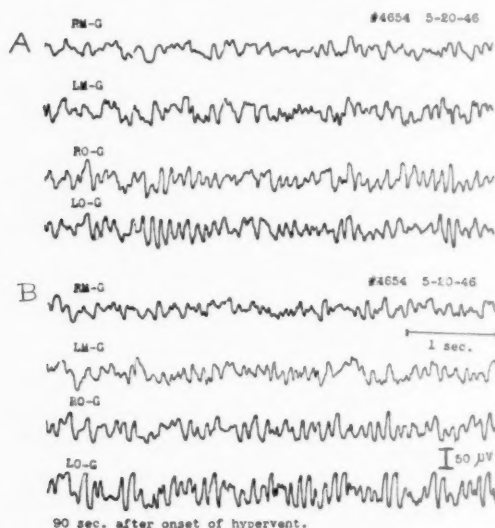


FIG. 4.—Abnormal electroencephalogram of an offspring of Huntington's chorea.

A. Subject 1073-III-3. Moderate disorganization of pattern in the form of mixed frequency modulation particularly in motor regions. Moderately slow singles are noted more in motors than in occipitals. Some rather sharp low voltage components are seen also.

B. Same subject. Ninety seconds after onset of hyperventilation. Note abortive spike-and-wave (4-5 p.s.) but no noticeable serial slowing.

may permit the following tentative prediction:

Twelve subjects (610-III-16, 615-III-1, 615-III-2, 672-IV-3, 1073-III-6, 1073-III-5, 1073-III-1, 261-V-5, 261-V-2, 261-V-4, 756-VI-6 and 756-VI-4) have a likelihood of developing Huntington's chorea. Seven subjects (610-IV-10, 615-III-3, 672-V-9, 945-IV-6, 1073-III-3, 261-V-3, 261-V-1) have a bare possibility of developing Huntington's chorea, and 7 subjects (1075-IV-4, 819-V-2, 756-VI-5, 1073-

III-4, 1073-III-2, 261-V-6, 756-VI-2) probably will never develop the disease.

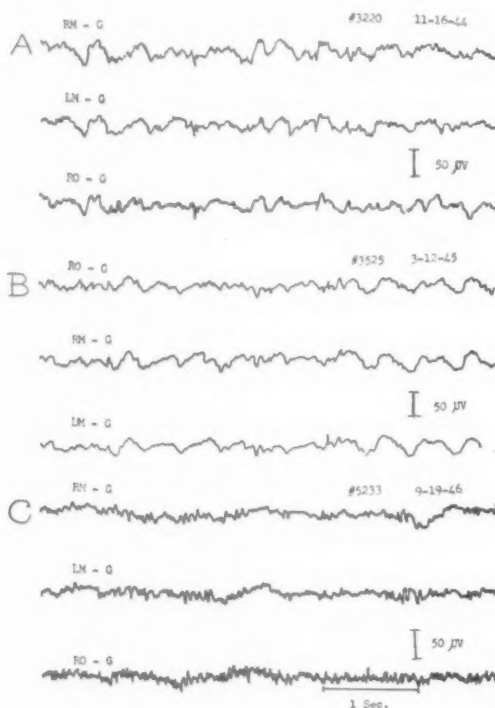


FIG. 5.—Electroencephalograms of patients afflicted with Huntington's chorea.

A. Patient 610-III-15, Age: 42. Low voltage fast activity superimposed upon very slow serials 3 to 6 per second of low to medium voltage found in both motor and occipital areas. There is some similarity between this record and that of her offspring, 610-III-16, (Fig. 1-A), although probably the occipital area is slightly worse than the offspring's. This type of an abnormal record was obtained from the patient throughout the examination. No normal alphas were seen.

B. Patient 672-IV-6, Age: 39, of another family. Note the fundamental similarity between this record and the record A, although probably the waves are slightly slower than those in A. There is no definite similarity between this record and that of her symptom-free offspring, 672-V-9 (electroencephalogram not shown). No normal alphas were seen in the record of this patient.

C. Patient 945-III-9, Age: 69. Low voltage sharp fast activity, 13-14 per second, in the motor regions. These waves are somewhat obscured by muscle activity in the right occipital region. This type of record was seen throughout the examination except for muscle artifacts which were obviously plentiful in all records of Huntington's chorea cases, but which could easily be identified. Essentially, those two types of record, A-B and C, were seen in 7 cases and only one record was within normal limits.



In this prediction very slow or fast frequencies, episodic slow bursts and/or quick or marked hyperventilation effect are assumed to have the greatest composite weight. The predictive value, modification or correction of this weight will obviously depend upon correlated findings on the cases studied, upon further studies made upon a larger series of cases and ultimately upon the extent of the accuracy of the prediction checked by follow-up for 20 to 30 years.

#### COMMENT

The offspring of Huntington's chorea as a group show a very large percentage (73.1%) of electroencephalographic abnormality. This extraordinary proportion of electroencephalographic abnormality has been seldom reported in the literature with respect to any other group that is relatively neurologically or psychiatrically symptom-free, as ours essentially is. Though our group is small, this finding is probably not due to chance. In a homogeneous genealogical group as in a Huntington's chorea family in which a dominant abnormal Mendelian trait has been proven that trait would obviously play a role in the production of inherent electrocortical dysfunction in a large number of offspring although they might be asymptomatic at the moment. No Mendelian ratio or sex-linkage has been established with respect to the inheritance of epilepsy, but Lennox and his co-workers report (26) that 59% of the 143 parents (both or one) and 65% of the 40 siblings and children of 94 epileptics showed abnormal EEGs. There being only 4 offspring, the data on them was insufficient. It is conceivable that because Huntington's chorea is a dominant hereditary trait the offspring showed a greater proportion of electroencephalographic abnormality (73.1%) than different blood relatives of the epileptic group in which Mendelian dominance has not been proven, although strictly these two groups are not comparable. Difference in interpretation might also be a factor. In the same study it is reported that in 55 families in which both the parents of the epileptics were available for an EEG, 69.1% of both the parents or one or the other parent showed abnormal or question-

ably normal tracings. Whether this high percentage is due to the sampling factor or different criteria of interpretation or whether epilepsy is a disease without genetic dominance which is nevertheless calculated to cause latent abnormality without clinical manifestation as compared to Huntington's chorea which has genetic dominance, will remain an open question.

The fact that in the main there is no apparent similarity in the abnormal electroencephalographic pattern between Huntington's chorea cases and their offspring and also the fact that half of our group (13) would be genetically expected to develop Huntington's chorea if they live to the third to fifth decade, coupled with the finding that most of Huntington's chorea show certain electroencephalographic similarities suggest the probable existence of the element of progression in the neurophysiological function-pattern, the element that is discoverable in the usual clinical symptomatology in the disease. Hence it might be reasonably assumed that, if electroencephalograms were taken of the offspring every 5 to 10 years, function-pattern in the half of the group might be found gradually to deteriorate and eventually resemble that of the afflicted cases when the half of the group become afflicted themselves. If this electrocortical deterioration runs *pari passu* with the clinical progression of the disease it will still remain within the realm of conjecture what anatomical structures or structure-relationships, if any, are responsible for the altered electroencephalographic picture during well-developed clinical conditions. We have found that motor areas of the offspring are usually electroencephalographically worse than the occipital when there is a difference between the two. Dusser de Barenne and his co-workers (9, 10) have demonstrated in their extensive series of experiments by means of the strychnine technique that electrophysiologically there is a complete neural circuit passing from the precentral motor cortex through the basal ganglia, thalamus, and back to the precentral motor cortex, although anatomical connections between the precentral motor cortex and the basal ganglia still remain questionable (Von Bonin, Hines in 4). On the basis of elec-

trophysiological studies it is pointed out by Bucy(4) that a lesion in the basal ganglia may cause choreiform movements by release of their influence on the motor and premotor cortex. From all these considerations one may be led to hypothecate that whatever the abnormal EEG of the offspring forebodes as to the future condition of the entire cortex *per se*, it might at least connote some inherent functional immaturity of the interrelations between the premotor area and deeper centers. This hypothesis, of course, does not explain all the electroencephalographic findings (bilateral episodic "epileptic" bursts, marked hyperventilation effect, individual variations, etc.) nor is it sufficiently established to give any clue to further research; yet its plausibility cannot be entirely dismissed.

The theoretical validity of prediction of the development of Huntington's chorea in the offspring on the basis of their abnormal EEGs might be questioned, at least because of one empirical reason. It is reported(14) that about 16% of a large control group showed abnormal EEGs and of them .9% have paroxysmal epileptoid EEGs. It is not known whether the last group ever developed clinical epilepsy. Many of the offspring of Huntington's chorea cases had EEGs that would fall in the last category, but the hypothesis that they will in consequence develop Huntington's chorea would be somewhat far-fetched and without sufficient foundation if it were not for the fact that the genetical probability that half of the group will develop the disease happens to agree with the electroencephalographic probability. That is, 12 out of 26 offspring show the greatest electroencephalographic abnormality and hence are thought likely to develop the disease and from a genetic standpoint 13 (50%) should develop the disease. Whether the electroencephalographic weight supporting this prediction will be valid can be determined only by extensive observation and long-range follow-up. Whatever electroencephalographic weight proves to be valid, if it does, it will identify beforehand individual cases that are likely to develop the disease, which genetics is not yet able to do. The social implications of such a finding will be obvious.

## SUMMARY

Twenty-six offspring representative of 9 families with Huntington's chorea in the immediate ancestry were subjected to the following studies: physical, neurological, psychiatric, psychometric, anthropometric, genetic, and electroencephalographic. Of these various procedures, but 2 seemed to offer probable predictive value: namely, the EEG and the blood groupings. Nineteen (73.1%) of the subjects showed definite electroencephalographic abnormalities, particularly in the motor regions. Bilateral paroxysmal bursts like those observed in epilepsy were found in the resting record of about half (8) of the cases showing abnormal EEGs. According to a composite weight, 12 offspring had the highest electroencephalographic abnormality and were thought likely to develop the disease as this proportion approximated the genetic probability. No definite intra- or inter-family, or parent-offspring, electroencephalographic resemblances were noted. The study of blood groupings was expanded to include all available cases of Huntington's chorea in addition to the offspring study and disclosed a disproportionately large number of individuals in Groups A and O. Long-range follow-ups with repeated EEGs on a larger series of offspring are recommended as well as a much more extensive examination of the blood groupings of Huntington's chorea patients and their offspring in order to establish the statistical validity of the 2 procedures.

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## BROMIDE PSYCHOSES: FOUR VARIETIES<sup>1</sup>

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Bromide psychoses, like alcoholic psychoses, occur in a variety of forms. Four varieties are known today, and it is the object of this paper to consider them briefly.

The first variety is *simple bromide intoxication*. As the patient takes the drug to excess, he grows dull and sluggish. He becomes forgetful and irritable. Sometimes there is a worsening of the symptoms for which he has been taking the medicine, a fact of importance because, unaware that the worsening may be a sign of intoxication, the patient or his physician may come to the disastrous conclusion that the dose should be increased. Neurological signs may appear—pupillary irregularity and sluggishness, tremors, unsteady gait, and thickness of speech. (Adolf Meyer once told me that in the days before the Wassermann test a case diagnosed as general paralysis proved later to have been nothing more than a simple bromide intoxication.) If the intoxication is recognized and the bromide stopped, the patient will in most cases get well. Chlorides will hasten recovery. If on the other hand the bromide is continued, a more severe psychosis may supervene. (Sometimes, even if the drug is stopped, enough damage has already been done to precipitate one of the more severe psychoses anyway.)

The second variety is *delirium*. The essential feature of this state is disorientation. There may or may not be additional symptoms—restlessness, mood disturbances, delusions, and hallucinations. The disorientation of delirium has certain distinctive qualities and is not to be confused with that shown by an occasional nondelirious schizophrenic (1). Delirium may set in all at once, or it may develop more gradually, in which case it would appear that *time*, rather than place or person, is the sphere in which the disorientation strikes first (2).

The first two varieties are well known, but the next two are not.

The third variety is *hallucinosi*s, which differs from delirium in that the patient is well oriented. This is the rarest of the four varieties.

The fourth variety is a *transitory schizophrenia* with paranoid symptomatology. This disorder, which occurred 13 times in a series of 74 cases of bromide psychoses, was described in a recent paper (3), in which emphasis was laid on its resemblance to "ordinary" schizophrenia. The patient, who in most cases possesses a schizoid personality, has taken bromide for some neurotic symptom, and after a time she becomes dull and shows other signs of a simple intoxication. Continuing to take bromide, she then breaks out with ideas of reference, and delusions and hallucinations of the type seen in paranoid schizophrenia. At this stage one might easily make the mistake of diagnosing an "ordinary" schizophrenia, but the serum is found to be loaded with bromide, and when the drug is stopped the schizophrenic picture clears up completely in a relatively short time. I shall refer to this variety as bromide schizophrenia.

Table 2 in my earlier paper (3) shows that most patients with bromide schizophrenia get well a month or two after the drug has been stopped. Seven patients out of 13 got well in less than a month. Three required between 1 and 2 months. The remaining 3 required respectively, 5, 10 and 12 months.

There are unmistakable differences between the clinical picture of a bromide schizophrenia and that of a nonschizoid person in a bromide delirium, differences that go beyond the fact that the first patient is well oriented while the second is not.

In the first place, the bromide schizophrenic shows the disturbances of rapport and affectivity that characterize schizophrenia in general. The patient is aloof and suspicious. One patient asked, "Am I going to get a square deal?" and said she wouldn't talk unless her lawyer was present. By contrast, delirious patients without schizophrenic tendencies, however confused they may be,

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.



are usually friendly and accessible. An agitated delirious patient will cling to you like a frightened child to its mother. Typical is the man in delirium tremens who, when I entered his room, mistook me for an old friend, invited me to sit down, and said he would see about getting me a drink.

In the second place, there is a difference in the degree of self-reference seen in the patient's delusions and hallucinations. *Self-reference is tremendously increased in bromide schizophrenia*. Here are examples which reveal the contrast. (a) A bromide schizophrenic hears voices which single her out by name and proclaim for all to hear that

TABLE 1

INCIDENCE OF BROMIDE PSYCHOSES IN  
PERIOD OF STUDY  
(Pennsylvania, 1931-1939)

	Male	Female	Total
First admissions .....	1,245	1,028	2,273
Bromide psychoses:			
Simple intoxication ...	5	5	10
Delirium .....	16	32	48
Hallucinosi			
(nonschizophrenic) ..	..	3	3
Schizophrenia .....	..	13	13
	—	—	—
Total bromide psychoses..	21	53	74

Note 1: The above figures do not reflect the actual incidence of simple bromide intoxication. The study was made in a mental hospital, and it is obvious that most patients with simple intoxication are cared for at home or in a general hospital.

Note 2: Of the 13 patients with bromide schizophrenia, 9 had varying degrees of disorientation. These patients really had *two* psychoses, a schizophrenia and a delirium. In the table, however, they are entered only as schizophrenia.

she is immoral. (b) A delirious woman hears voices which say that her house is on fire and that her husband has been killed in an accident. There is a world of difference here. The imaginations in (a) are embarrassing; the finger of scorn is pointed at the patient, who complains that she has been singled out for abuse. In (b), on the other hand, there is nothing whatever in the way of shame or embarrassment. It is a catastrophe to have one's house burn down, but one can talk about it without blushing. The first patient believes herself the victim of *persecution*; the second, of *hard luck*.

Self-reference may be elevated in delirium too but, if the patient is not of the schizoid type, this elevation is as nothing compared to that seen in bromide schizophrenia.

In keeping with this distinction as to degree of self-reference, there is a characteristic difference as to whether the patient considers himself a *solitary* victim of abuse, or on the other hand a member of a *group* or community that is being abused. Whereas the schizophrenic invariably thinks he has been singled out, the nonschizoid delirious patient tends to feel that others share his danger with him. When the house is on fire, for example, many people are in danger, not just the patient alone. A veteran of World War I, in a fever delirium, fought imaginary German soldiers who were trying to break into the house—a perfect example of a danger that threatens us as a community, and not just one of us.

As regards age incidence, there is a remarkable difference. As the graph shows, the great majority of patients with bromide delirium are past fifty, while, on the other hand, most bromide schizophrenics in my series were below forty. Of the 13 schizophrenics, 6 were in their thirties, one was twenty-seven, and one only eighteen. This is not surprising, for people with schizophrenic tendencies are prone to run into trouble relatively early in life.

In the foregoing paragraphs I have taken pains to specify that I am discussing the contrast between the bromide schizophrenic and the *nonschizoid* person in a delirium. When a person already schizophrenic takes bromide and becomes delirious, the distinguishing features that have been described do not apply.

It is evident that bromide delirium and bromide schizophrenia are separate and distinct disorders. At the same time, it must be remembered that they may co-exist, for if a bromide schizophrenia is not recognized and the drug is kept up, delirium will supervene. In the 13 cases in my series, 9 patients showed some degree of disorientation. In such cases it would be inexact to say that the patient has "a" bromide psychosis. He really has *two* psychoses, a schizophrenia which came first, and a delirium which came later.

Between bromide *hallucinosi* and bromide schizophrenia there is the same distinction in respect of rapport and self-reference as between *delirium* and schizophrenia.

The recognition of bromide schizophrenia (and of bromide hallucinosis) is especially important in these days of shock treatment.

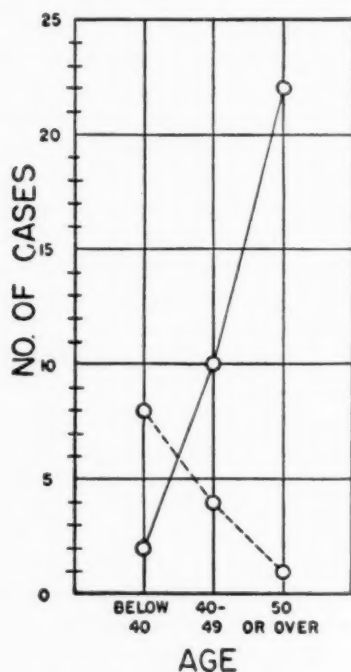


FIG. 1.—Age incidence: Comparison of bromide delirium and bromide schizophrenia.

—— Br. delirium (34 cases).  
 ----- Br. schizophrenia (13 cases).

It is commonly believed that shock treatment yields its best results in cases of recent onset. But it is precisely in cases of recent onset

that one must ask oneself whether the case was not really a bromide (or other toxic) psychosis that would have cleared up anyway. We shall never know in how many cases shock treatment has been given for an unrecognized bromide schizophrenia. The number cannot be great, for this disorder is uncommon. But it is mischievous to give such treatment to a person whose brain has been damaged by a poison (with the possible exception of those few cases which run a protracted course).

One thing is essential to the adequate recognition of bromide psychoses, and that is the *routine* use of the quantitative serum bromide test in mental hospitals. Each patient admitted to a mental hospital ought to have a bromide test automatically, just as he has a serological test for syphilis. If the test is done only when the physician has asked for it, some cases will be overlooked, for often it is only the patient's unexpected recovery that arouses the suspicion that the psychosis might have been a toxic one—and then it may be too late for chemical verification.

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## THE HOSPITAL TREATMENT OF INVOLUTIONAL PSYCHOSES<sup>1</sup>

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This is a study of women suffering from involutional psychoses who were treated at the New York Hospital, Westchester Division. The histories of 100 patients admitted consecutively between 1930 and 1940 were reviewed in detail. The results of treatment in this group have been compared with the results obtained in a group of 69 patients admitted between 1942 and 1946 who in addition to the same treatment received electric shock therapy.

Of the first group of 100 patients studied in detail, 86 were diagnosed as suffering from involutional melancholia, 14 from the paranoid type of involutional psychosis. As a group, these patients were above average in intelligence and had had superior school and educational opportunities. The average age on admission was 52 with a range of from 38-72 years.

Review of the family histories of these patients revealed mental disorders among close relatives in 49 patients, with depressive illnesses predominating. Notable was the fact that there were 13 patients who had relatives who had suicided. Of the mentally ill relatives, there was a preponderance of females in the proportion of 4 to 1.

These patients enjoyed relatively good health in childhood and were notably neat, conscientious, and helpful to their mothers. Close attachment to and identification with female figures in the home were noted in about two-thirds of cases. This was related to the fact that the mothers were usually dominant while the fathers tended to be subordinate figures in the home though often outstanding business successes.

Study of the prepsychotic personalities of this group brought to light an almost universally good energy drive directed to conscientious

performance and good deeds. They lacked imagination and were rigidly practical. Over one-third were noted as being "sociable." They were active in community affairs where they were generally leaders, were aggressive individuals, generally abrupt and dictatorial in manner but conscientious, meticulous, and hardworking. They managed community affairs well. As noteworthy as the reported sociability was their lack of warmth and intimacy in personal relationships. As a group they had few intimate friends and few purely recreational and social interests. Interests which predominated could be included in terms of "good works" such as church, missionary and sewing circles, and activities concerning the underprivileged. This same self-sacrificing motivation was also prominent in a group including another one-third of patients who, though more narrow in their interests, made slaves of themselves to their homes and children. This group never tolerated dust or disorder in their homes and, because of their compulsive meticulousness, their homes were anything but a place of pleasure or relaxation. As were the sociable group, these were dominant figures in their homes, determining family policies by their rigid, uncompromising, and stubborn attitude.

In the remaining third of the 100 patients were few who were markedly introverted in their make-up. There was a neurotic, dependent, and passive group and those who tended to suspicion and irritability.

Almost three-fourths of the group of 100 patients were noted to have 3 or more of the following traits: reticence, prudishness, meticulousness, methodicalness, overconscientiousness, oversensitiveness, stubbornness, worrisomeness, penuriousness.

An obsessive drive toward perfectionism was a prominent feature. In many histories were repeated the phrases, "never a speck of dust in the house," "things had to be done right or not at all." The relationship of perfectionism to a defense against sexuality

<sup>1</sup> Read at the 103d annual meeting of The American Psychiatric Association, New York, N. Y., May 19-23, 1947.

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noted by many psychiatrists is supported by the study of the sexual adjustment of this group. Though 75 of the patients had married, as a group they married late in life, the average age being almost 30; several married men much older than themselves; only 49 of the 75 married patients had children. Most of the childless married women married late in life or used contraceptives consistently. Nine women had unwanted pregnancies aborted. The group of mothers apparently had little erotic interest in their husbands but were, however, overly attached and oversolicitous mothers when their children were young and often jealous and nagging parents when their children reached adolescence and began to emancipate themselves.

Because of the traits of reserve, inhibition, and secretiveness, many intimate facts concerning the development of the sexual life in these patients were not generally obtained. They tended to marry men who did not have strongly manifested sexual drives and as a group were generally passive in sex relations, which were usually considered a matter of unpleasant and often disgusting duty.

However, it is noteworthy that, in about one-third who finally unburdened freely, excessive childhood masturbation, sexual indiscretions in adolescence and early adulthood were commonly discovered; four patients ultimately told of extramarital pregnancy and induced abortion in adolescence. The impression is gained, that these patients had normally strong instinctive drives which, however, were strongly inhibited.

Overt homosexuality in the group was uncommon, being noted in less than 5% of the group, though strong aggressive drives and a belittling of the male, together with a protest against the passive female role, were commonly noted.

Overmodest and prudish, the mothers in the group did not discuss sexual topics with their children and passed on to them a puritanical inhibited attitude toward sex which they themselves had often obtained from their own parents. It was the lack of a healthy balancing of the maternal drive by an erotic drive which appeared to determine the possessive oversolicitousness of the mothers in this group.

The menstrual histories of these patients revealed that four-fifths began to menstruate at the usual age between 11 and 14. One-fifth had the menarche between 15 and 18. Dysmenorrhea was marked in one-fifth and irregularity of the periods was noted also in about one-fifth. Neurocirculatory disturbances as expressed in symptoms of hot flashes, dizziness, and sweats were a prominent feature in the menopause in only about one-fourth of the patients. Marked menorrhagia and metrorrhagia were found in less than 10% of patients and were usually treated by irradiation though 4 patients had hysterectomies.

The average age at the completion of the physical menopause was 48, with a range of between 34 and 56. Forty per cent of the group had their last menstrual period after the age of 50. In two-thirds of the patients, the last menstrual period had been two years or more before admission to the hospital. Four patients had panhysterectomies before the age of 40 and none of these developed mental illnesses in response to this, but each developed a psychosis in the fifties in response to predominantly psychological stresses.

The development of incapacitating symptoms was gradual. Two-thirds of these patients had been ill more than 6 months before hospitalization; 40 had been ill longer than one year and 11 had been ill over 3 years before admission.

These patients tended to restrict their lives to set patterns and resented any change in their rigid program. They were ill-prepared to accept the sweeping changes in adjustment so often demanded in the involutional period in women. Those who had inhibited their instinctive drives and were childless resented the loss of their capacity for reproduction and often felt cheated and bitter. The prudish were often plagued by guilt and shame over increased sexual tension associated with their climacterium. Some returned to adolescent patterns of masturbation which led to overwhelming guilt feelings. A few indulged in extramarital affairs which were soon broken up because of increasing feelings of guilt. The majority suppressed their instinctive drives in the period preceding hospitalization and instead

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developed visceral tensions, leading to centering their attention on hypochondriacal complaints chiefly about the gastrointestinal tract.

Loss of appetite was almost universal, resulting in gradual weight loss which by the time of admission amounted to as much as 60 pounds in one case and generally reached 20 pounds. Insomnia, associated with fears of losing their minds and obsessions with death, added to the increasing agitation and depression. These symptoms further reduced the patients' physical reserve and led to increased susceptibility to intercurrent infections which were commonly reported in the period of illness before hospitalization.

Patients admitted after the middle of the 1930's had often been treated before admission with ovarian hormones. Among these, many became more agitated and suicide drives were increased in response to the heightened sex tension associated with the engorgement of the sexual parts caused by this medication. In our experience, such hormones should be used in involutional melancholia only after careful evaluation of the patient's personality and symptoms. Of the entire group of 100 women, estrogen therapy was judged to be indicated in only 19, and of these, only 4 seemed benefited by this medication.

Of the precipitating causes of the psychosis financial insecurity, death of near relatives, and concern over emancipation of children were the most common. One of these factors was present as the single important precipitating cause in almost three-fifths of cases. In 26 patients, financial insecurity was the only significant precipitating cause; in 18 instances, death of husband, parent, or child was the only significant factor; and in 13 instances, emancipation of children through leaving home for marriage or school was predominantly important. These same stresses alone or in combination were the important precipitating cause of the mental illness in three-fourths of the group.

The remaining one-fourth of patients became ill apparently in response to predominantly physical stresses such as infection, traumatic accidents, operations, abortions. Nine women were included in a group best described as having their illnesses precipi-

tated by "aging factors." These displayed a marked general lessening of physical and mental efficiency and a marked reduction in attractiveness due to aging. Physical symptoms of the menopause were reported as the only significant factor in only 3 patients.

The picture of these patients as they came to the hospital after having been ill many months was commonly that of prematurely aged and weakened individuals. With the more modern medical and psychiatric treatment, a surprising proportion, in fact a great majority, regained their physical vigor and often appeared younger than their years.

A review of the symptoms expressed by this group of patients has resulted in findings which agree with those of most other psychiatrists. The symptom triad of delusions of sin and poverty, obsession with death, and an anxious and delusional fixation on the gastrointestinal tract in the setting of agitation and depression constituted the usual picture of both those who recovered and those who did not. Paranoid projection mechanisms were commonly expressed, though only significantly predominant in the group diagnosed as paranoid involutional melancholia. Preoccupation with suicide was universally found in patients with whom a rapport was established, and indications of such preoccupation were found in most other patients. One patient shot her only son in anticipation of her own suicide attempt as she felt "so bad and couldn't leave him as she needed him so."

As indicated above, a majority of patients suffering from involutional psychosis on admission were markedly undernourished, dehydrated, and toxic. Secondary anemia, mild or advanced vitamin deficiency, and foci of infections frequently complicated the picture. Treatment was directed immediately toward the remedy of these conditions. Heavy and prolonged sedation with barbiturates and other drugs had often been used to manage them at home before admission and frequently added toxic and even delirious symptoms to the functional picture. Forced fluids, a high caloric and high vitamin diet, enemata and colonic irrigations, and a judicious reduction in sedatives were often indicated and resulted in a gratifying improvement in the patient's general physical condition in a

matter of a few days. Hydrotherapy, prolonged baths, and sometimes massage allayed the agitation enough to ensure adequate rest in many so that chemical sedation could be soon stopped.

These patients were thoroughly studied physically. A complete physical examination by the psychiatrist and additional examinations by consultants in internal medicine, gynecology, ophthalmology, otolaryngology, and dentistry were given all patients. Indicated laboratory tests and X-rays were completed shortly after admission. Any pathology discovered was treated promptly and thoroughly. A close psychotherapeutic relationship with these patients was obtained only after long and patient contact. Positive rapport was often on the basis of the physician playing the role of parent or child in the patient's mind, particularly the former. Physicians who reminded the patient of their mates often had great difficulty in establishing a positive therapeutic relationship.

A program of activities, including physical education, occupational therapy, and activities to promote socialization was available to all patients. Intensive nursing care by trained psychiatric personnel proved helpful in counteracting the tendency to regress habit patterns and rutted symptom formation. Frequent interviews with a psychiatrist were an important part of the treatment of all patients.

#### RESULTS

In the group of 100 patients who did not have electric shock treatment, 42% were distinctly benefited after a follow-up period of

from 7-16 years. Thirty-two were recovered; 10 were much improved. Twelve had died; 9 were unimproved; 4 were suicides. The average period of hospitalization for those distinctly benefited was over 2 years.

The results in a group of 69 additional patients with similar histories, personalities, and psychoses who received electric shock therapy besides the usual psychiatric treatment were much better. At the end of a follow-up period of 1-5 years after leaving the hospital, 33 were recovered; 16 much improved. These 49 patients representing almost 75% of the group were home and functioning in the community. Less than 20% were unimproved and of these 3 were suicides. There were no other deaths. The average length of hospitalization was only 8 months for the shock-treated group in contrast to the 2-year period in the group who did not have electric shock.

Most shock-treated patients had more than one series of electric shock treatment. One patient recovered after 5 series spaced at monthly intervals. Shock treatment broke into the rut of symptoms and permitted the development of a close personal relationship with these patients. Advantage was taken of this contact to give intensive psychotherapy and this was believed to be instrumental in their eventual recovery. In spite of the relatively advanced age of these patients and the rigidity of their prepsychotic personality, most who recovered after electric shock treatment displayed a distinct capacity for modification of their previous personality traits which resulted in a better adjustment to life than that before their mental illness.

## CORRESPONDENCE

### A LETTER FROM OUR OLDEST MEMBER

In reply to a request for information about certain former officers and members of The American Psychiatric Association, and other matters within his recollection, Dr. N. Emmons Paine sent the following interesting communication and kindly consented that his letter should be printed.

Dr. Paine has been a devoted member of the Association since 1887 and rendered on his own initiative and at his own expense two conspicuous services to the Association, as recounted in his letter.

The volume of 1916 is a most interesting document. It is a 44-page cloth-bound book privately printed in Boston, and contains in addition to the 280 portraits a list of the members represented, with their addresses and titles as of that year. For this permanent record, as well as for the large group photograph, the Association is much indebted to Dr. Paine.

THE EDITOR.

DEAR DR. FARRAR:

Your letters indicate that you have recognized my acquaintance with early members of our Association, and those letters have freshened memories of a special interest of my lifetime, which began about 60 years ago. That interest was the preservation of the individuality of all members, as shown by their portraits, during the first century of the existence of our Association. Antedating this interest, however, let me reveal to you some of my personal influences.

My father and his father were physicians, and since my infancy I expected to become a physician also. While in Hamilton College I learned of the research in cerebral pathology that Dr. John P. Gray was introducing at the Utica Asylum. Such studies attracted attention because they were in advance in the "care" in the asylums of those days. Just before graduating in 1874, I visited that institution, met Dr. Gray, and told him that I would like to know more about his studies. He took me to the laboratory and introduced

me to the pathologist, Dr. Diecke, who showed me the large, thin sections of brains that he was making for microscopic study. According to my memory, the aim then was to detect definite changes which would be diagnostic of the several forms of mental disease.

My medical degree from the Albany Medical College, in 1875, was followed by clinical studies in Vienna. I became assistant physician at the Middletown Asylum, N. Y., in 1877. That step was a natural one to take, as my father, Dr. Horace M. Paine of Albany, had during several years taken the leading part in bringing about the establishment of that institution, of which he became a trustee. He had taken me with him when the cornerstone was laid of the first building. Dr. Talcott, the superintendent, was a member of the Association, and I wanted to join it also, but assistant physicians were not eligible for membership. It was in 1887, when at the age of 34 I had become superintendent of the Westborough State Hospital, that my application was accepted. The next year I attended the annual meeting, at Old Point Comfort, Va., and became acquainted with many of those distinguished men. I was impressed by their character and by the time and thought those devoted officers and members were giving for our profit and pleasure. I felt an urge to do something helpful too.

In those days, the framed pictures of groups were often seen hanging on office walls. In fact, my own picture was included in a group of the members of the faculty of Boston University School of Medicine,<sup>1</sup> and there were my associates looking down upon me in my office. Then and there the urge took form. Gathering and grouping the portraits of all members of the Association of Medical Superintendents of American Hospitals for the Insane should become

<sup>1</sup> Dr. Paine had been on the faculty of the Boston University School of Medicine since 1887; in 1895 he became professor of psychiatry and was made professor emeritus in 1925.

a special interest in my life. Such a group should include all members from the first. My plan was explained to the officers. They were unwilling to commit the Association to such an undertaking, but they agreed that I could act upon my own account with their good will. That arrangement was satisfactory to me.

Thereupon, I sent circulars to all members, informing them of my purpose, and requesting each one to send me his photograph for inclusion in the group. The result was the large picture of 1891. It contained 176 portraits, 175 of them being members and Dorothea L. Dix not a member. It included the original 13 founders of 1844, and it covered the first 47 years of the life of the Association. The orders for the picture were less than expected. The deficit and my labor were my contribution to the history of the Association. My urge was satisfied and I felt happy.

When 25 more years had passed, and the year was 1916, I published the second historical record. It was a book entitled "Members of the American Medico-Psychological Association to the Number of Two Hundred and Eighty." I had discussed previously with Dr. Henry M. Hurd my plan for collecting photographs of the members between 1891 and 1916, and whether they should be published in the form of a book or a wall picture. He said he preferred sitting and looking at pictures in a book, to standing and looking at pictures on the wall. His preference was adopted. The book cost me \$568.49, and I received from sales \$370.00, so that my contribution of money to the Association was \$198.49. I presented to libraries copies where they would be permanent records. Once more the urge to do something for my associates was comforted.

After the passage of more years, the centenary of the Association was approaching. This would be just the time to produce a book which would contain pictures of the membership of the last 28 of the 100 years. But by that time the number of members had increased to 3,387. I asked that the cost of the clerical work and the guarantee of the publication should be assumed by the Association, with the expectation that subscriptions would repay the cost ultimately. A refusal was the answer.

Copies of the original publications have been presented to the Association office in Rockefeller Center: the book in February, 1941, and my own copy of the framed group in March, 1944. They form a pictorial history of members of the first 72 years, and they should be accessible there always.

The wall picture cannot be reproduced from the original lithographic plates. In May, 1892, I paid the Art Publishing Co. of Boston \$34.43, the balance not covered by subscriptions for the group picture, and the company destroyed the plate sometime afterward. The printing and mailing of notices were my own contribution. Neither can another edition of the book be printed from its plates, which had been stored by me until I disposed of my home. Moving from my house to a room in my daughter's home brought my storage space to an end. I offered the plates to our headquarters for possible use at some future time, but the reply was that there was no room for such storage there. Thereupon the junk man took them. That the collections have historical value is shown by the reception this month of April of orders for the book from two of our members, one of them a former president. And previously, in February, 1944, a letter came from Dr. Bookhammer informing me that he wanted to collect the portraits of all the presidents for exhibiting at the centenary celebration and asking for my help. That was the time I contributed to our headquarters my own framed group, where it would be found by him and others.

And now, when looking backward over these many years, the freshened memories see again many bright spots along the way. When collecting the hundreds of portraits for the two publications, there were many heart-warming incidents. For example, a member had died and his widow wanted him to be forever with his friends; a photograph was precious, for it was the only one she had. A superintendent had died, and his successor helped to include the chief he had admired and loved. And within me, through the years, the urge of 1888 to preserve for all time the individual features of my associates has been a continuing satisfaction.

This goes to you with the good wishes of your associate,

N EMMONS PAINE.

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## A LETTER FROM PROFESSOR BONHOEFFER

*To the President of The American Psychiatric Association, Dr. Winfred Overholser, Washington.*

MY DEAR COLLEAGUE:

It was a great pleasure and unexpected surprise when I found on my birthday table the beautiful dedicatory volume to my 80th birthday with an introduction by my old faithful co-worker Paul Jossmann, and from you, Mr. President, the congratulations of The American Psychiatric Association.

The volume affords me double pleasure. Not only am I again in contact with my co-workers and colleagues but also have evidence again of their friendship and of their gratifying progress in the new scientific

world. The volume conveys to me the hope that gradually the so much needed international scientific exchange will be re-established.

I wish to express my sincere thanks even before I have had a chance to study the individual contributions in detail. Even a casual survey tells me that the American psychiatrists and neurologists are bringing us new contributions in fields that were inaccessible to us during the unhappy conditions of the last decade.

Please transmit to your Society my heartfelt thanks and greetings.

Yours very sincerely,

K. BONHOEFFER.

Berlin-Charlottenberg

## COMMENT

### MENTAL HOSPITAL ADMINISTRATION

The Mental Hygiene Division of the United States Public Health Service has released figures showing populations in the state mental hospitals in the United States, percentage of overcrowding, number of employees and ratio per patient, together with per capita expenditure for maintenance.

Over-all figures for the United States, 1937-1946 inclusive, show a percentage of overcrowding of 10.9 in 1937, falling to 7.6 in 1939, followed by a gradual rise to 16.3% overcrowding in 1946. For the United States as a whole the annual per capita expenditure was \$284.74 in 1937. Each year thereafter showed an increase in per capita cost with relatively conspicuous rise to \$436.72 in 1946.

For the country as a whole the ratio of patients to employees did not vary greatly during the 10-year period, being 5.8 patients per employee in 1937 and 6.2 in 1946. Regionally, however, there was considerable discrepancy, the figures ranging from 3.8 patients per employee in New Hampshire to 9.9 in Oklahoma (the District of Columbia made the good showing of 2.6 patients per employee).

Still wider discrepancies were shown in the overcrowding figures. Four states suffered from higher than 30% overcrowding. These were Georgia, 43.7%; Illinois, 50.1%; Louisiana, 57.4%; Arizona, 58.4%. In contrast, seven states reported patient populations under hospital capacities. These were Idaho, -0.2%; New Mexico, -1.3%; Texas, -1.4%; Nebraska, -1.7%; Wyoming, -4.6%; North Carolina, -5.3%; South Dakota, -13% (District of Columbia, -15%). There was a considerable regional spread, likewise, in per capita expenditures, ranging from \$219.64 annually per capita in Kentucky to \$644.82 in Wisconsin (District of Columbia annual per capita cost \$1,058.86).

These figures are based on the 1946 census of patients in mental institutions collected and tabulated by the Bureau of the Census, Department of Commerce. In the future, these data will be collected by the Mental Hygiene Division of the Public Health Service, in view of the increased responsibilities of this service under the National Mental Health Act.

## NOTICE

### NEW OFFICES OF THE ASSOCIATION

The New York office of The American Psychiatric Association has been moved to the RKO Building, Room 412, 1270 Avenue of the Americas, New York. Telephone numbers remain the same as previously: Circle 5-4697 and Circle 5-4698.

As a convenience to Canadian members, prospective members, and others interested, the Council have established a Canadian office in conjunction with the editorial office of the AMERICAN JOURNAL OF PSYCHIATRY. The office is conveniently located at 113 St. Clair Ave. W., Toronto, where visiting members will be welcome.

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## NEWS AND NOTES

**U. S. ARMY MEDICAL SERVICE RESERVE.**—Surgeon General Raymond W. Bliss has announced that authority was granted to the Army Medical Department in April to place immediately 300 additional Medical Service Reserve officers on extended active duty. Reserve officers who volunteer will be assigned to duty in all four sections of the recently formed Medical Service Corps, according to their qualifications. The greatest need is in the Medical Allied Science Section, which includes personnel trained in psychology, physiology, biochemistry, nutrition, serology, and other related medical sciences needed in the Army.

A long-range program has been planned to provide the highest possible standard of medical care for the U. S. Army with a minimum number of physicians required in administrative positions or performing duties properly belonging to medical allied sciences. The aim is to have each man practicing in the field for which his training and inclination best fit him and to assign Reserve personnel to service paralleling their civilian pursuits.

Plans are being made to expand further the graduate training program for Regular Army Medical Service Corps officers. Many leading universities are cooperating in this program, including Johns Hopkins, Harvard, Northwestern, Columbia, and others. The Regular Army Medical Service Corps now has an authorized officer strength of 1,022. Qualified men interested in a Regular Army career may apply for Reserve commissions which will entitle them to compete for Regular Army commissions.

**PSYCHOLOGICAL CINEMA REGISTER.**—This nonprofit professional film service distributes a total of 102 film subjects that are especially suitable for psychological and psychiatric training and instruction. Twenty-one new films in the fields of human development, personality, hypnosis, physiology, and animal psychology are now available. A revised edition of the Psychological Cinema Register Catalog will be ready for distribu-

tion by the summer of 1948. The catalog may be ordered by writing to the Psychological Cinema Register, Audio-Visual Aids Library, State College, Pennsylvania.

**WILLARD STATE HOSPITAL NURSING AND SOCIAL SERVICE INSTITUTE.**—A two-day Psychiatric Nursing and Social Service Institute was held at Willard State Hospital, Willard, N. Y., June 2 and 3, 1948, under the auspices of the Rochester State, Syracuse Psychopathic, and Willard State Hospitals, the latter serving as host under the direction of Dr. Kenneth Keill. There was a large attendance of public health nurses, social service workers, psychologists, students from nearby universities, and civil agencies interested in community psychiatric problems. A number of nationally known authorities addressed the meetings. The newest film on the treatment of psychiatric disorders, "Let There Be Light," was shown, through the courtesy of the Medical Department of the United States Army.

**GAP REPORTS.**—One copy of any report is available to any professional person upon request; additional copies may be secured from the office of the chairman of the Group for the Advancement of Psychiatry, 3617 West 6th, Topeka, Kansas, at a cost of 10 cents per copy, plus postage. The following reports are available: No. 1, Shock Therapy; No. 2, The Psychiatric Social Worker in the Psychiatric Hospital; No. 3, Medical Education; No. 4, Commitment Procedures; No. 5, Public Psychiatric Hospitals.

**VETERANS ADMINISTRATION TRAINING COURSES.**—According to a statement recently released by the Veterans Administration, 101,447 ex-servicemen and women of World War II were as of December 1, 1947 enrolled for training in medicine and related fields. This number represents approximately 4% of all World War II veterans receiving training under the G. I. Bill.

More than 40% of the quoted number were taking strictly medical courses. In the

allied fields, it is reported that 3,463 veterans are being trained in chiropractic and 712 in osteopathy.

**TEACHING MISSION TO GERMANY.**—Dr. Erwin W. Straus, director, professional education and research, Veterans Administration Hospital, Lexington, Kentucky, has been invited to join a teaching mission to Germany during July and August, 1948.

The mission is organized by the Unitarian Service Committee with the support of the State and War Departments and the Military Government in Germany. Dr. Otto Kraye, head of the pharmacology department of the Harvard Medical School, will act as chairman of the mission.

**VETERANS ADMINISTRATION RESIDENCIES.**—Dr. Lee G. Sewall, chief, professional services, has announced that residencies in psychiatry are now available at the VA Hospital, Roanoke, Virginia.

Training will be given at the hospital under the supervision of the department of psychiatry, University of Virginia School of Medicine. The 3-year program, approved by the American Medical Association, will include didactic and clinical instruction in all phases of psychiatry and basic neurology, with experience in the techniques of treating psychiatric patients.

Applications should be addressed to the Manager, VA Hospital, Roanoke 17, Va.

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## BOOK REVIEWS

SEXUAL BEHAVIOR IN THE HUMAN MALE. By Alfred C. Kinsey, Wardell B. Pomeroy and Clyde E. Martin. (Philadelphia and London: W. B. Saunders Company, 1948.)

There are many remarkable features about this Kinsey book, not the least of which is its brilliant best-seller status so quickly achieved upon publication. This is rather an unprecedented situation for an opus in the field of the social sciences, and a somewhat unfortunate one in this particular case. The startling nature of the information recorded, at variance in so many respects with the professed beliefs and attitudes of society, might alone have suggested a modicum of caution with regard to its premature diffusion. For this first volume is preliminary only, based on the histories of 5,300 white American males, a small sample in what purports to be a taxonomic approach.

The objective of this survey, to which Kinsey and his associates have devoted themselves with extraordinary industry for 9 years, has been to study all aspects of human sexual behavior, impartially and without preconceptions, measuring its variation in populations which, according to the authors, were made "homogeneous for sex, race, marital status, age, educational level, and either the rural-urban background or the religious background of the individual." The data for this purpose have been secured through first-hand, usually single interviews of  $1\frac{1}{2}$  to 2 hours, in which 300 to more than 500 questions were asked in rapid-fire order. Kinsey himself has conducted over 50% of the interviews in the total of 12,000 case histories so far amassed, and the first junior author more than 30%, so that there appears to have been a reasonable degree of consistency in the method of interviewing.

This volume reporting frequencies and sources of sexual outlet among American males shows a tremendous range of individual experience coming within the span of apparently normal human adjustment. A sharp difference is revealed between the sexual mores of the more highly educated groups and those of the lower educational levels. The difference in age-curve for sexual experience, quantitative and qualitative, is an arresting finding, together with the indication that the sexual pattern of an individual as early displayed remains more or less constant throughout his adult life. The percentages of persons who have admitted involvement in every type of sexual activity, and particularly in socially taboo types of activity, are far greater than previous studies have suggested. This is strikingly true with regard to homosexual experience. However, experience and pattern are not synonymous terms, and there are a number of sweeping statements in the portions of the book dealing with taboo types of sexual activity which need to be modified in the light of actual sexual

deviation and its psychopathology. The authors' presentation leaves one with the uneasy feeling that the book is apt to serve the function of a burlesque show, giving people a somewhat socially acceptable excuse for sliding down to a little lower social level and feeling good about it.

If this report were as indisputably scientific as it is interesting and provocative, it would indeed be a contribution of major importance for psychiatry. Its value, however, is entirely contingent upon the accuracy of the statistical data and, in last analysis, upon the method of their procurement. Here it is that the work is most vulnerable to criticism. Despite the authors' sincere attempt to check answers for validity in a variety of ways, it is questionable whether they have eliminated the distorting effect of repression, exaggeration, and mitigation, and all the faults of memory, voluntary and involuntary, to which the human being is prone in an area where social conscience, instinct, and emotion have throughout life been impelled to a working compromise. Then, too, the impression is created that the gimlet-eye technique, and a species of third-degree interrogation played too large a rôle in the collection of the data. The use of detective and police methods in arriving at facts, especially for scientific purposes, is a contentious practice. It certainly represents a sacrifice of scientific integrity to achieve what is bound to be a dubious approximation. After all, in a scientific procedure, we are not after a confession or testimony which will convict or exonerate a person. Neither are Kinsey or his associates, but their method must have for many persons a similar subjective impact.

Psychiatry can only view the implications of the Kinsey report, like other work done on a production line basis with statistics and card indexes, with cautious reserve, until such time as it has withstood the test of clinical assay, and confirmation from other methods of scientific approach using less explosive techniques and more thoughtful deductive reasoning. No piece of research, however good in conception and execution, should be considered valid unless it has been subjected to clinical assault. In other words, the validity of the deduction should not be accepted until some good, earnest researchers have set about trying to prove that it is no good and have succeeded only in establishing that it has some good. The Wassermann test is a good example of such testing. Hardly had the announcement of its discovery come forth than hundreds of capable workers set about to prove that it was fallacious. Only when they failed to do so was it established and accepted.

It seems rather regrettable, in view of the importance of the subject, that this work was not presented for professional criticism prior to being offered on a wholesale publication basis. The fact

that at least 20 more years are to be devoted to the investigation underlines the tentative nature of the results so far recorded. Certainly the public needs a more mature understanding of sex, but one wonders if the Kinsey report has at this stage the stability to provide it.

C. C. BURLINGAME, M. D.,  
The Institute of Living,  
Hartford, Conn.

THE ANATOMY OF LANGO RELIGION AND GROUPS.  
By T. T. S. Hayley. (Cambridge University Press, 1947.)

The author visited the Lango from September, 1936, to May, 1937. In his foreword he remarks, "On correcting the proofs some five years after completing the book, I find it heavy reading." He's right—it is. One stands amazed that in 8 months or so he obtained so much data, compacted into so few pages. He advises that the study "be regarded primarily as a book of reference" on whatever phase the reader may be interested in: religious premises of the Lango; the practice of white and black magic and ceremonial groupings with specific reference to the tribe, the clan, the *erogo*, the family, territorial groupings and the medicine man.

Hayley found that the religious ceremonies of the Lango were basic to the inculcation and preservation of intergroup loyalties, no matter what that group was—tribe, clan, family, or other. Religion was the one absolute, cohesive force in the entire social structure, in whole and in its parts. This meant formalism in ceremonialism, insofar as the formalism pointed the way to group organization and cohesion.

The mainspring of Lango religion and magic is *Jok*, the Mana principle. *Jok* is a neutral, universal power, associated with all phenomena in nature, whether causeless or purposeful; *Jok* is inherent in all human experiences, whether good (health) or bad (illness, either physical or mental); *Jok* power is present to the greatest degree when extreme emotional states are achieved; *Jok* power exerts a sort of taboo, insofar as it may be dangerous when tribal laws are infringed; *Jok* is resident in the "spirit" or "soul" of individuals. Obviously this *Jok* power may be controlled for good, or "white magic," by the *ajwaka* or medicineman, or for bad, or "black magic," by the *ajok*, or sorcerer.

In his diagram (facing page 38) Hayley gives an excellent analysis of two forms of group interrelationship: A, socially determined, and B, territorially determined. Through the use of a transparency the two can be superimposed. I mention the diagram and the technique of presentation because one may obtain such a complete résumé of Lango social organization in this manner.

This book is so compactly written that a detailed review is out of the question. For those interested in tribal organization, *per se*, Hayley presents a discussion of three ceremonies, *apuny*, *ewor*, and *wyel*, which are disintegrating owing to colonial contact. For those interested in the clan, "still the focal point of the [Lango] individual's interests,"

one may read and learn of the impact of Christian doctrines upon native beliefs, to the end that now, by Christian natives, the ceremonies are performed "merely as medicinal remedies."

Hayley has given us an insight into religious structure and its hold upon group organization and thought. He has also given us a good picture of a people in religio-cultural transition. The story is one far more of group reorientation than it is of individual adjustment.

W. M. KROGMAN, PH. D.,  
University of Pennsylvania.

IMPRISONED ABNORMAL DRINKERS: Application of the Bowman-Jellinek Classification Schedule to an Institutional Sample.

Part. I. Review and Analysis of Data. Part II. Illustrative Case Histories and Conclusions. By Maurice Floch, A. B. (Reprinted from Quart. J. Stud. Alcohol, 7: 518-566, No. 4, March 1947, and 8: 61-120, No. 1, June 1947.)

This detailed piece of research attempts to weigh "the value of a scientific theory when applied to human beings," and also, "to measure, if possible, the helplessness of such a theory in actual treatment and prevention of alcoholism."

Commendable though the effort and purpose, two serious flaws depreciate the value of this work from a practical viewpoint. One is the premise that a prison populace can be tested (by any method) and the results applied to the rest of society. The second flaw, less obvious but permeating the entire project, is a confused interpretation of the meanings of *diagnosis* and *treatment*, with a lack of presented factual knowledge of current practical methods of treating alcohol problem drinkers.

Lengthy reference is made to the well-established presumptions that effective psychotherapy (including diagnosis) is dependent on the examiner and his personality, bias, training, etc., and that people—immemorially—need to air their troubles. What connection these psychiatric platitudes have with a system for labelling drinkers (and with such labels as "promotional drinker," "stammtisch drinker," "stupid discordant drinker,") this reviewer failed to find. Nor could he find evidence (or trails) pointing to any connection between use of this classification system and the treatment and prevention of alcoholism, in spite of Floch's conscientious detailed efforts.

Although all studies aid in some way in the understanding of a problem, and/or in the recognizing of what is needed to handle the problem better, it is to this end and extent only that the survey under review can be considered helpful. Otherwise, it represents a research energy-output heading nowhere in practical reality.

ROBERT V. SELIGER, M. D.  
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THE PHYSICAL BACKGROUND OF PERCEPTION. By E. D. Adrian. (London: Oxford University Press, 1947.)

This book is based on the Waynflete Lectures delivered by Adrian at the College of St. Mary

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Magdalen, Oxford, in 1946. In these he presents a summary of the basic research that has been done on the electrophysiology of the nervous system. He mentions the work of Gotch, Sherrington, and Lucas, outlines briefly the salient features of the neurophysiology of the sense organs, the motor and sensory areas of the brain, and finally attempts to bridge the gap between what we know of psychology and our knowledge of neurophysiology. The book will prove interesting for the layman who knows little of the electrophysiology of the brain. However, he will find difficulty in understanding many of the topics discussed because not enough information is given for a person with no previous experience in the field to understand the experimental evidence. The lectures are disappointing from the point of view of workers in this field because the material given is rather elementary; also very little reference is made to work outside of the laboratories at Cambridge and Oxford.

The author finds that the mechanistic view of the mind which the late Kenneth Craik presented in his book, *The Nature of Explanation*, offers a tenable hypothesis for the physiologist concerned with mental functions. "Thinking in Craik's view depends on the operation of various nervous mechanisms which produce symbolic models of physical reality. The organism carries in its head not only a map of external events but a small scale model of external reality and of its own possible actions." As the author states in the preface, the book attempts to describe aims and methods, and no conclusions are reached because no conclusions ought to be drawn until we know more about the physiology of the brain. The book lacks an index and bibliography.

EDWIN F. GILDEA, M. D.,  
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Washington University School  
of Medicine.

FREUD: ON WAR, SEX AND NEUROSIS (New York: Arts & Science Press, 1947.)

This book consists of the following 9 papers taken from Freud's "Collected Papers" which were first translated and published in London in 1924-1925 (Hogarth Press): *One of the Difficulties of Psycho-Analysis*, *The Case of Dora*, *Obsessive Acts and Religious Practices*, *The Sexual Enlightenment of Children*, *"Civilized" Sexual Morality and Modern Nervousness*, *Three Papers on Various Phases of "Contributions to the Psychology of Love"* and *Thoughts on War and Death*. The last one was originally translated by the reviewer under the title "Reflections on War and Death" just 30 years ago (New York: Moffat Yard, 1918).

There is also a preface and glossary by Paul Goodman, who is described on the inside jacket as "a libertarian critique of the modern social temper, etc."

Many evaluations of Freud's views and personality have appeared before and since his death, as in the case of Darwin, Spinoza, and other great minds who have left their imprint on civilization; this will

undoubtedly continue for years to come. Mr. Goodman tells little about the author that is worth repeating here. In other words the editors of this book are offering the reader a handy volume of 9 reprints, some small, some larger. They are all very interesting and instructive as is everything written by Freud. The most important of the papers for the readers of this JOURNAL is the Dora case, which fills about half of the book. Much has been written about this classic which every psychoanalytic psychiatrist must read and study, but those who do not possess the English "Collected Papers" should not fail to read it in the present volume.

A. A. BRILL, M. D.,  
New York.

CONCISE ANATOMY. By *Linden Edwards*. (Philadelphia: The Blakiston Company, 1947.)

Those who are familiar with Professor Edwards' "Anatomy for Physical Education" will need no review of "Concise Anatomy," which replaces it.

The new volume of 500 odd pages treats of embryology and histology as well as gross anatomy and is in 2 parts. The first 7 chapters deal each with a system in general, and one wonders why the respiratory, digestive, urogenital, and endocrine systems instead of being included here are relegated to the end of the book. Doubtless there are good reasons.

The second part is a systematic approach to the various regions—a little novel perhaps but an approach that seems well adapted to the needs of those for whom the book is intended.

A large percentage of the illustrations are from Morris. One's personal predilection is for simplicity in illustrations, but probably there are many who enjoy unravelling such a maze as meets the eye, *e. g.*, Figures 61, 111, 164.

The publishers have kept the volume to reasonable proportions by the use of rather small type—a matter of little moment to the younger generation but a little hard on this particular reviewer.

Altogether, this book will continue the success of "Anatomy for Physical Education."

H. A. CATES, M. B.,  
Dept. of Anatomy,  
University of Toronto.

HANDBOOK OF PSYCHIATRY. By *Winfred Overholser, M.D.*, and *Winifred V. Richmond, Ph.D.* (Philadelphia: J. B. Lippincott Co., 1947.)

Dr. Overholser and the late Dr. Richmond have prepared this guidebook of psychiatry for the non-technical reader. It is a reasonably good presentation of present-day psychiatric theory, hospitals, treatment methods, and diagnoses but suffers as do most attempts to simplify a very complex range of material. On the one hand the authors "talk down" to the readers so that there is at times an almost oversimplified presentation, and on the other hand the text at times becomes more technical than most laymen will find easy to understand, as in the undefined use of such words as insight, rationalization, dissociation, etc. The au-

thors' professed purpose of a presentation of psychiatry without details of treatment except in general terms to discourage self-treatment is largely negated by a somewhat technical bibliography of psychiatric medical journals and textbooks.

This book covers the psychiatric gamut of diagnoses fairly completely. That "the average man or woman who has mentally ill relatives or friends" could read a description of their illness here is true, but I feel the simple reading without the background of discriminatory understanding will be more confusing and even dangerous than helpful. The one chapter that is of greatest value, but the one most likely to go unread or hastily skimmed through, is the last one on Psychiatry and the Layman.

It is felt that the group who can read this book most profitably is that of allied medical workers who have some direct interest in psychiatric problems, such as nurses, physiotherapists, occupational therapists, nurses aides or attendants, and others. These individuals would have more opportunity to utilize the somewhat technical bibliography.

CLARENCE S. HOEKSTRA, M.D.,  
Department of Psychiatry,  
University of Colorado  
School of Medicine.

#### PRACTICAL PSYCHIATRY AND MENTAL HYGIENE.

By *Samuel W. Hartwell, M.D.* (New York: McGraw-Hill Book Co., 1947.)

The author of this textbook of psychiatry for nurses announces his intention to accomplish four goals: (1) to help the student develop an interest in dynamic psychiatry; (2) to make psychiatry more easily understood; (3) to make teaching of psychiatry more practical; and (4) to permit flexible use of the text.

These goals are reached to a limited degree. This last-named goal is to be accomplished by using the book as parts, including sections on Medical Psychology, Psychiatry, and Mental Hygiene.

The section on medical psychology covers the historical background and describes psychological testing and other specific techniques. The psycho-analytical discussion is simplified, almost to the point of the naive.

The section on psychiatry is the most adequate part of the book. It covers general etiological factors, symptoms, case history methods, and classification of mental illness. The specific discussion of organic and functional psychoses is worded in easily understandable terms, and utilizes some case material.

The final section on mental hygiene presents the author's personal concepts of mental hygiene, and includes a description of the child's ideas about himself and about the world. This reviewer felt that this portion of the book is somewhat vague as to the responsibilities of the nurse in the field of mental hygiene—perhaps this merely represents present psychiatric attitudes toward the problem.

The book has an extensive bibliography and a glossary that will prove of practical value to the average student nurse.

ROBERT STUBBLEFIELD, M.D.,  
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University of Colorado  
School of Medicine.

LAW AND THE PRACTICE OF NURSING. By *Nettie D. Fidler, B.A., R.N.*, and *Kenneth G. Gray, M.D., K.C.* (Toronto, Canada: The Ryerson Press, 1947.)

This book provides information which all nurses practicing in the Dominion of Canada should have. Actually it does a great deal more. The discussion of the relationship of the nurse to the physician, to the patient, to the hospital, and as a member of an organized profession, is informative and at the same time challenging; challenging with respect to the evaluation of present laws and the enactment of future better ones.

The information given on drug control, public health, mental illness, health insurance, the organization of the nursing profession, and the varied legislation relative to nursing represents a minimum that any well-informed Canadian nurse should know. A generous portion of the philosophy of the authors on nursing practice and nursing education, as well as the history of nursing in Canada, are integrated with the legal aspects. This appears well justified.

On page 51 (chapter on mental illness) after a general discussion of restraint, seclusion is passed over with "Needless to say, patients are never locked in their rooms. . . ." It would have been more realistic to discuss the dangers and precautions. For patients are locked in their rooms. It can do no good to deny that which exists.

The authors have more than attained their objective—"Most nurses have realized the necessity of being informed on drug legislation, accident liability, and so on; but until recently only a minority of nurses concerned themselves with the broader and more general aspects of legislation. Our hope is that this book will provide an introduction of these important matters."

LELA S. ANDERSON, R.N.,  
Nursing Consultant,  
American Psychiatric  
Association.

PARDON AND PEACE. By *Alfred Wilson, C.P.* (New York: Sheed & Ward, 1947.)

This book, which is reviewed by a psychiatrist who is a practising Catholic, deals with confession and describes in a very detailed fashion the reasons why confession is so important for Catholics. It points out the ways the Catholics should approach the Confessional, et cetera. The author, a priest, shows the psychological benefits from mental catharsis, describes our mental problems as being pushed into the subconscious mind and points out how the high churchmen of the Episcopal Church have reintroduced confession and how some non-

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conformist ministers openly advocate it. He also refers to the Oxford Group or Buchmanites who introduced "sharing," a kind of public confession.

From a psychiatric viewpoint the book is valuable to psychiatrists who treat Catholic patients who are burdened with excessive scrupulosity. In Chapter 10 the author defines a scruple as "an uneasy and unfounded fear of having committed sin, based on feeling rather than on reason." "Scrupulosity is an obsession of the moral conscience (technically called a phobia) causing a state of acute anxiety." . . . "The scrupulous sick and suffering souls who need to be handled with patience, reverence and tenderness." . . . "There are myriads of causes of scruples, ranging over the physical, psychological and spiritual planes, and to find the real cause in any given case is no easy matter and requires great patience, sympathy and skill. There is no panacea for scruples, no slick rule-of-thumb applicable in and sufficient for all cases."

Father Wilson lists as *physical* causes of scruples: shock, strain, and nervous exhaustion caused by over-work, adolescence, change of life, et cetera. *Psychological* causes of scruples, he claims, may be ignorance in sex matters, and "failure to find the right attitude toward the fundamental instinct of race preservation." Other psychological causes of scruples are excessive emotionalism, a vivid and undisciplined imagination, a hypercautious spirit due to a too cautious unbringing "wrapped in cotton wool," and chronic lack of decision due to the fact that as a child the patient was never allowed to make up his own mind. The third cause of scruples, according to the author, is *spiritual*, such as faulty, defective knowledge of human nature, failure to distinguish between voluntary and involuntary actions, et cetera. He writes, "False ideas of God often have a psychological origin: for example, a person who in childhood was so constantly found fault with and reprimanded by his parents that he got the impression that he could do nothing right and lost confidence in himself—such a one may unconsciously have transferred to God ideas of authority which derive from his parents' abuse of it. Hence he forms the idea of God as a fault-finder whom it is almost impossible to please."

The author then lists (pages 138 and 139) 14 suggestions as to how the scrupulous person can cure himself, such as searching for the cause, developing a sense of humor, avoiding self-pity, checking up on his health, et cetera. It is noteworthy, however, that at no time does Father Wilson recommend that the patient consult a psychiatrist, although he has stated that scrupulosity is a phobia.

Father Wilson, moreover, admits not only that we have a subconscious mind but also that we have an unconscious mind and writes (page 35) "It is a well known fact that our activity is often inspired by unconscious activities."

A person reading this book might obtain the false impression that Catholics never need psychiatric help because the author, on page 10, writes: "One of the greatest Viennese psychologists, a man bitterly anti-Catholic, had the honesty to admit that, among his cases of serious psychological disorder,

he had never had a genuinely practicing Catholic." On page 13 and 14, he quotes from an article in "The Catholic Digest," where an individual consulted one of the best known psychiatrists of his native city, who said to him, "If the thousands of our clients once could gain a deep and abiding faith, most of us psychiatrists would have to go out of business" . . . "People come here in droves and pay me inordinate amounts of money for trying to do what the Catholic Church does for nothing."

All psychiatrists as well as intelligent laymen know that talking out one's problems gives a great deal of emotional relief. The psychiatrist and psychoanalyst, however, often have to deal with the patient's unconscious, and confession is not of help under such circumstances. This fact has been recognized by the Catholic Church and it is for this reason that the Catholic Church has sponsored the teaching of psychiatry, has encouraged many of its priests to become psychiatrists, and has arranged for psychoanalytic treatment for its priests and nuns who have developed neuroses.

In summary, I believe that this book should be recommended to psychiatrists who are treating Catholic patients so that they will know the fundamental attitude of the Catholic Church toward confession and sin. It is a book that could be recommended for certain patients suffering from scrupulosity, although it is my personal opinion, as a result of treating such patients, that the mere reading of a book written by a priest will be of no more value to them than will the receiving of advice given by the priest in a Confessional. The scrupulous person hears what the priest says but rejects it due to his own unconscious motivations.

FRANK J. CURRAN, M.D.,  
Louisville, Ky.

ABNORMAL PSYCHOLOGY. By James D. Page. (New York: McGraw-Hill Book Company, 1947.)

Another book on abnormal psychology appears, written by the associate professor of psychology and director of the psychological clinic at Temple University. It is a simple, nontechnical easy-to-read text for beginning students of psychology. The illustrative clinical material tends all too often to be too brief and nonspecific of the reaction pattern it is supposed to exemplify. The chapter on mental mechanisms is plainly written and accessible to the undergraduate student of psychology.

Psychological testing is very briefly dispensed with in about two pages; the author makes a statement regarding the Rorschach that many clinicians might challenge: "Although the Rorschach has many enthusiastic supporters who have reported a wealth of favorable experimental data, a large number of clinical psychologists question its usefulness and validity."

Nondirective psychotherapy is intelligently but too briefly discussed. The chapter on psychoanalysis and related schools is clearly and authentically constructed. The approach to the neuroses and psychoses is descriptively rather than dynamically oriented.

Bibliographical references are excellent and well chosen. A glossary of technical terminology is included to aid in the orientation of the beginning student. The text includes a list of visual aids, motion pictures, and film strips correlated with some of the material in the book.

This book is written for students beginning in psychology and, as such, can be recommended. It is simply and clearly written. Graduate clinicians will find the text too basic for their enjoyment.

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STUDIES IN GENIUS. By *Walter G. Bowerman*. (New York: Philosophical Library, 1947.)

This book is in two parts: I. A Study in American Genius, and II. A Study of World Wide Genius. It contains a great many facts about 1,000 eminent Americans, and an equal number of other men and women in world history. The Americans, men and women, were selected from the Dictionary of American Biography, according to the amount of space devoted to them in that 21-volume work. Each one had at least 1½ pages there, had died before his section of the D.A.B. was completed, had spent at least half his life in the United States, was not included in Havelock Ellis's Study of British Genius, was not a criminal, traitor, or merely physically or emotionally unusual, and was not prominent by mere luck or position.

The chapter headings give the scope of the facts presented: *Place of Origin* (he denotes this by the nativity of the grandfathers; 352 of these were born outside the Colonies or the United States); *Occupations* (he discusses versatility, occupations of fathers, and season of birth); *Heredity and Parentage* (he finds the families larger than average, the eminent one often the first-born); *Childhood and Youth* (precocity, university education, early travel, delicate health in youth are considered); *Marriage and the Family* (he finds a tendency to marry late, but repeatedly, to have smaller families than the parents, rather frequent cousin-marriages); *Duration of Life* (gives most frequent age at death, in a distribution curve, correlation of eminence with month of birth); *Wars and Epidemics* (he finds that periods of catastrophe bring genius to the front, and shows it in tables, and he discusses effects of solar changes such as sunspots); *Pathology* (here he gives types of illness and causes of death, neuroses and psychoses, unusual temperaments and handicaps); *Height and Weight* (he finds tendency to the very short or tall type; discusses 4 main types of build and temperament); *Pigmentation* (he reports characteristics of fair-hued as contrasted to dark-hued). He sums up his impressions in a concluding chapter.

A somewhat similar plan is followed for Part II.

In spite of the statistical nature of the work, and the author's recognition of artefacts and fallacies and devices to avoid them, the treatment of the material seems rather impressionistic, subjective, and even, in matters of natural science, naive. He speaks of the possibility of a preglacial civilization surpassing ours, but admits that a scientist-friend has assured him it is impossible; another friend, by looking into the eye, has been able to diagnose fibroids, digestive disorders, and even an artificial leg; he locates the pineal gland under the brain, near the pituitary, etc. The book is interesting and provocative, but not definitive.

J. A. KINDWALL, M.D.,  
Wauwatosa, Wisc.

CASEBOOK OF NON-DIRECTIVE COUNSELING. Edited by *William U. Snyder, Ph.D.* (New York: Houghton Mifflin Company, 1947.)

This book compiles 5 cases counseled by different psychologists according to principles formulated in Carl Rogers' book, "Counseling and Psychotherapy." The case records are largely based on phonographic recordings or almost verbatim notes. None of the 5 patients shows severe psychopathology, but 3 seem to belong to the neurotic group. Despite some individual differences a certain uniformity and predictability of counselor responses is striking. This is obviously due to their rigid adherence to the principle of "nondirectiveness." It seems that nondirective therapy constitutes the opposite extreme of authoritarian psychotherapy. The emphasis on avoidance of direction in therapy leads to an almost total projection of the responsibility for therapeutic progress onto the client. At times the therapist is reduced to a modified echo of the client's statements.

The nondirective counselor restricts his responses to feelings verbalized openly but fails to clarify the emotional meaning of disguised verbal contents. The client who takes recourse to projections and other denial mechanisms to express his feelings toward the therapist is not responsibly helped to face these emotional contents as part of a process happening in the present, and in relation to the helping person. The setting of the ending is practically left to the client and is accepted without any prior move on the counselor's part toward joint clarification of the client's feeling and progress.

This casebook serves well as a clear presentation of the practice of nondirective counseling to all those interested in this method. The beneficial effect of nondirective therapy on the patients presented demonstrates the importance of such essentials as respect for the individual's feeling and belief in his capacity to grow in any sincere therapeutic effort.

PAUL A. ZWICK, M.D.,  
Philadelphia.

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In searching for a specific article the Author entry should be consulted if the name of the author is known, since the complete bibliographic reference is to be found after the author's name only. When there are two or more authors for an article the complete entry appears only under the name of the first author. Under the name of each of the joint authors a cross reference is made to the original author entry.

The titles under the subject entries are often inverted or shortened. The Subject Index covers original articles, biographic material, book reviews, obituaries, editorial comments, and news items.

R. indicates a book review; the title of the book is followed by the author's name and is also listed by author under Book Reviews. Ed. indicates an editorial comment or news item. Memorial notices appear under the heading Obituaries and under the names of individuals.

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\* Owing to an error, pagination in the March, 1948, issue of the JOURNAL duplicated that of February. Bibliographical references to articles in these two issues, therefore, should include after the page number the letter F or M to indicate the month of issue, as shown in this index.

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